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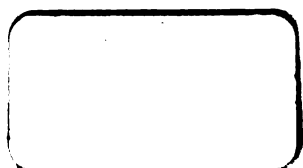
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T R A N S A C T I O N S
OF THE
AGRICULTURAL SOCIETIES
OF MASSACHUSETTS,
FOR THE YEAR 1848.

81
TRANSACTIONS

OF THE

AGRICULTURAL SOCIETIES

Secretary of State.
OF MASSACHUSETTS,—

FOR THE YEAR 1848.

COLLATED FROM THE ORIGINAL RETURNS,

Buttore
BY WILLIAM B. CALHOUN,

SECRETARY OF THE COMMONWEALTH.

BOSTON:

DUTTON AND WENTWORTH, STATE PRINTERS,

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1849.

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SECRETARY'S OFFICE, *March 24, 1849.*

THE present volume of Transactions of the Agricultural Societies does not differ essentially from the preceding volumes. It has been made up from the Returns of the past year by the gentleman, who has been employed heretofore in the same work, Hon. A. W. DODGE, an intelligent farmer of Essex County.

In some respects, the reports of the festivals and fairs of the last Fall are inferior, in point of interest, to those of former years. In two or three of the counties, Middlesex and Hampden especially, this must be attributed to uncontrollable causes, which prevented the carrying out of matured arrangements.

Complaint is sometimes made, and apparently with justice, that many of the reports of committees, made at the annual shows, are deficient in fulness. In some of the counties, great pains are taken to give a satisfactory view of every thing important connected with these shows. And these reports are so valuable and instructive, that the desire is a natural and a strong one, that they may all partake of this character. Where prizes are awarded for successful efforts, the premium may be satisfactory to the individual who obtains it; but this alone adds nothing to the stock of general information, which is the leading purpose of the bounty of the State. It is greatly to be hoped that the reports of committees may continue to improve in the essential requisite of furnishing, with minuteness, all the means by which, in each case of premium, the result has been attained. And it may not be improper to repeat here,—what was suggested in the preliminary notice

to the last volume,—that abundant time is now allowed, under the law of 1847, chapter 69, for the maturing of reports. The cattle shows, being usually held not later than the first or second week in October, from that time until January may be taken to give completeness and accuracy to the reports and returns. They are required to be filed in the Secretary's office on or before the tenth day of January.

Premiums for general cultivation, or general farm improvement, are becoming more common than in former years, and, in some parts of the State, have acquired special favor. They are undoubtedly the best test of advancement and skill in the application of agricultural knowledge, and present the farmer moving forward in all the departments of labor. Success in the general pursuit, where all branches are cared for and no one is neglected, should be accounted the true purpose of reward. It is believed, that public sentiment indicates this as the leading object of successful competition.

The essays which form a prominent feature in the doings of some of the societies, especially that of Essex County, deservedly attract general attention, and are rendering excellent service in the promotion of agricultural science. Such essays, it is hoped, will become prominent in the doings of all the societies.

In the present volume, an attempt is made to preserve, in a permanent form, some of the contributions made to the cause of agriculture by the Legislative Agricultural Society, which holds its conversational meetings in the hall of the House of Representatives, during the sessions of the Legislature. It is hoped, that what is furnished from this source may prove not unacceptable to the farmers of the Commonwealth, and lead to ampler contributions hereafter.

Selections, as in preceding volumes, have been made from the addresses delivered at the various fairs; and that of Professor Norton, on an important topic of agricultural chemistry, has been given in full. No addresses were delivered before the societies in Bristol and Barnstable counties; and the one before the Hampden Society has not been furnished.

ABSTRACT.

MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE.

THE President and Secretary of the Massachusetts Society for Promoting Agriculture, in making the annual return to the Secretary of the Commonwealth, required by the act of 1847, chap. 69, can only pursue the same course of statements which they have heretofore returned, and which have appeared in the Massachusetts Agricultural Statistics.

In the autumn of 1845, the trustees imported stock of the highest character in Europe as milking stock. Their efforts since have been concentrated to promote this object alone, and the only reports made, have been made by the committee entrusted with the care of this stock.

In the last report of this committee to the trustees, is incorporated a report to them by Mr. Phinney, (one of the board of trustees to whom the stock and their management is confided,) with a design to impress upon the farmers the great and certain advantage resulting from the careful breeding of a pure stock.

JOHN C. GRAY,
President of the Mass. Soc. for Prom. Ag.

BENJ. GUILD, *Secretary.*

Boston, January 1, 1849.

REPORT OF THE COMMITTEE ON THE IMPORTED STOCK.

The committee, (Messrs. Lawrence, Gray, Sears, Codman, and Warren,) having charge of the imported stock in the keeping of Mr. Phinney, of Lexington, and who were also authorized to adopt the best mode of ultimate distribution of the calves as they became of an age for use, beg leave to offer the following report of Mr. Phinney, as to the present state of the cattle, and the course adopted and pursued for distributing one animal of each sex to each incorporated county agricultural society in the Commonwealth.

The report was prepared by Mr. Phinney, at the request of the committee, with the desire of showing to the farmers of Massachusetts the value of stock of known qualities, and which may be relied upon if preserved pure, uniformly to sustain the same character.

"The undersigned, having the care of keeping and of distributing the calves of the imported stock, offers the following report to the committee, in compliance with their request, communicated to him by the secretary.

"It is now little more than three years since the trustees of the society decided to appropriate the income of their funds to the importation and diffusion of foreign breeds of cattle, with a view of improving the stock of the whole Commonwealth. Accordingly, it will be recollected, that, in the summer of 1845, a competent agent was employed to undertake the business of making the selection; and, in September of that year, ten head of cattle arrived in Boston, under the superintendence of Mr. Bickett, the agent, viz., four cows and a bull of the Ayrshire breed, and four cows and a bull of the North Devon breed,—these, in the opinion of the trustees, being the breeds best calculated for the improvement of the dairy and other stock of the country. Two of the Ayrshire cows have died since their arrival in this country, and their places have been supplied by the purchase of two others from the imported stock of Capt. Randall, of New Bedford.

"The whole stock, on its arrival, was placed under the care of

the undersigned, upon his farm in Lexington, where it now remains, with exception of the two that have died. They are kept in winter upon the best of hay, of which each animal, over a year old, will require an average of twenty pounds per day, with a portion of wheat bran, and oil or Indian meal, equal, in value, to two quarts of Indian meal and a peck of carrots per day. In the summer, they are soiled, the undersigned not having sufficient pasturing, when they are kept on rye, lucerne, clover, oats, and corn cut green, and carried to the stalls, with the same quantity of wheat bran and Indian meal, as in winter. By this feed, and with the aid of the curry-comb and brush, they are kept in a healthy and growing condition, but not fat.

"If it occur to the farmer that this mode of keeping is more expensive than usual, to the milking cows of farmers, and the consequent productiveness of the same breed not to be expected, when distributed among the cattle of the country, it should be remembered that all animals kept expressly for breeding, to make them valuable for that purpose, must be kept in higher order, and with more care, than those that are intended only for the dairy, or usual service of the kind of animal. The certainty that the qualities may be preserved, if the blood be kept pure, is remarkably proved in the dog, the horse, and the hog. Some of the cows are first-rate breeders, giving, in each year, a perfectly healthy and well-formed calf; others are less so, being more irregular in the production of their offspring.

"The whole number of the pure blood stock now owned by the society, is thirty-three, including the original importation, and four that have been delivered to county societies, and also an Ayrshire bull calf, presented to the society by their president, the Hon. John C. Gray, out of his excellent Ayrshire cow Maggie. In addition to these, the society have four native cows, and six half-blood calves, making in all forty-three head.

"Four pure blood bulls, two of them Ayrshire and two North Devon, have been delivered to the four oldest county agricultural societies, (see note at the end,) and there are now five other bulls of the pure blood, ready for delivery to other county

agricultural societies, which will be of suitable age to put to use in the coming spring.

“Two heifers, from the imported stock, are now in calf by the imported bulls, which, with their calves, will be delivered to county societies, when they shall have dropped their first calves, and are again in calf by the imported bulls. By this measure, the public will secure the benefit of having four animals of the best and purest blood, from these heifers.

“The character of the Ayrshire breed of cattle for the dairy, and the North Devon for grazing, for the plough and all the useful purposes of the farm, is too well established to require any further evidence in support of their claims. The sales of their milk, over and above what is necessary for their calves, amount to over two hundred dollars per year. It is sometimes asked, by the advocates for cattle-shows, why the trustees suspended their annual shows, and discontinued their offer of premiums on crops, and for the best cultivated farms, and devoted their whole income to the improvement of stock? Our long repeated cattle-shows were degenerating into ‘holiday gatherings,’ and tending, in the language of the late Governor Wright, ‘to become arbitrary experiments, based on no philosophical investigation of cause and effect.’ In a country where so large a portion of the farmer’s wealth consists in his stock of cattle, and so considerable a share of his income is derived from the produce of the dairy, and beef for the market, it was believed that something might be done by way of improving his stock, which would advance the interests of agriculture more than cattle-shows, and premiums on crops. Suppose the whole number of cattle, owned in the Commonwealth, to be one hundred thousand, and by a distribution among them of one hundred or more of the pure blood of the best breeds of stock, their value should be increased ten, or even five per cent., would not this be of greater advantage to the farmer, than all that could be derived from the premiums heretofore offered? The beneficial results of crossing the pure blood of the best foreign breeds with our best native stock, is more or less apparent in many parts of our State. In passing through the western counties, and particularly the county of Worcester, the practised

eye will detect a greater or less infusion of the pure blood of some recent, or more remotely, imported race of foreign breeds in almost every animal that is met, and this, in many cases, where the source of this infusion was never known, or had been forgotten by the owner. It is a well settled principle in breeding, that the purity of blood in a long and well established race of animals, will prevail in transmitting their peculiar qualities to the progeny over that which is less pure, and of more recent and unsettled character. This is strikingly verified in the resemblance to the sire of the calves of our native cows, when bred to a foreign bull, of pure and long established blood. Impressed with a belief in this principle, the trustees determined to import no animal of '*ignoble blood*,' but such only as could be traced through a long line of ancestry of the purest and most approved breeds.

"The gentleman, sent out to make the selection, was well skilled in the science of breeding stock, and well acquainted with the merits of the various breeds of cattle in England and Scotland. Many of the animals imported had been favorably noticed by the bestowment of premiums awarded them by the best judges of stock in the country from which they came, and a well authenticated pedigree, heretofore published,* particularly of the bulls, proves them to be of the best and purest blood of the respective races to which they belong.

"There was one other consideration that operated upon the minds of the trustees, in making the importation of stock. It was found that the occasional importation of a single bull was inadequate to the task of bringing about the desired improvement. The animal was placed, for a limited time, in one section of the country, and then removed to another. The owners of the descendants of the first cross, in consequence of the removal, were deprived of the opportunity of following up the improvement, and by breeding out they soon lost the benefit of the first cross. The farmer, having no cows of the pure blood, whereby the race could be preserved, was drawn to the necessity of resorting to his native bull, and thus by breeding out, in

* See Abstract from the Returns of Agricultural Societies, for 1845, page 190.

a few years every trace of the pure blood became extinct, or, if the half-blood heifer was bred to the half-blood bull, the progress of improvement was limited to the half-blood. To obviate, therefore, this difficulty in the way of improvement, the trustees decided to import the pure blood animals of both sexes, and thereby secure the means of multiplying them among ourselves, hoping, by this measure, to be enabled to avoid the necessity of breeding out, and, within a few years, to furnish an ample supply of the pure blood animals, and thereby to enable the farmers to improve the whole stock of the Commonwealth."

The Trustees of the Massachusetts Society for Promoting Agriculture have thus begun the work, and they hope and trust that the intelligent yeomanry of the State will lend a patient and cheerful coöperation in promoting a cause so essential to their interests.

Respectfully submitted, by

ABBOTT LAWRENCE,
JOHN C. GRAY,
J. C. WARREN,
DAVID SEARS,
HENRY CODMAN,

Committee.

NOTE. North Devon bull "Leicester," to Abiel Heywood, Secretary of Middlesex Agricultural Society, 16th November, 1848.

North Devon bull "King Philip," to E. H. Kellogg, Secretary of the Berkshire Agricultural Society, 9th December, 1848.

Ayrshire bull "Hamilton," to S. L. Hinckley, of the H. F. and Hampshire Agricultural Society, 6th January, 1848.

Ayrshire bull "McGregor," to William S. Lincoln, Secretary of the Worcester Agricultural Society, 4th February, 1848.

. MIDDLESEX AGRICULTURAL SOCIETY.

The Middlesex Society of Husbandmen and Manufacturers held their fifty-sixth annual cattle-show, ploughing match and exhibition of domestic manufactures, at Concord, on Wednesday the 4th day of October last. The weather, in the early part of the day, was, as it had been for two or three days preceding, cold and stormy. Many farmers, not living in the immediate vicinity of Concord, were consequently prevented from attending. Still, the attendance was respectable, and though, in some respects, the exhibition was not equal to those of former years, it was, in all its departments, superior to what could have been anticipated.

Twenty-six teams were entered as competitors in the ploughing match. The work was skilfully and faithfully performed. The show of animals was equal in quality to those of former years, though it fell short in numbers, the weather rendering it extremely inconvenient to drive cattle from any considerable distance. The specimens of fruit were not numerous, but the quality was never better. One or two individuals presented about forty different kinds of apples, many of them new and excellent varieties. Many choice pears were presented,—twenty-six different varieties by one gentleman, and ten by another.

The society is subject to great inconvenience for want of a more commodious place for the exhibition of fruits, vegetables, and household manufactures. The only accommodation for the display of these articles consists of the hall and two small apartments on the lower floor of the court-house. On ordinary occasions, these rooms are excessively crowded. The articles presented for exhibition, especially those of household manufacture, the product of female industry, are unavoidably thrown together in such disorder as to render a satisfactory examina-

tion of them difficult, if not impracticable. The increasing popularity of this exhibition, the augmented number of candidates for the gratuities which the society awards for these specimens of fire-side industry, and the undoubted usefulness and propriety of its encouragement, require more extensive accommodation.

The address was delivered by the Hon. John C. Gray, of Boston.

ON FARMS, &c.

In the performance of the duty assigned them, the committee travelled over two hundred miles of road, a part of which was more rugged and hard-featured than they would have believed to exist in the county of Middlesex, had not experience afforded undeniable evidence of the fact. In two or three instances, they began to fear that the applicants for premiums had selected localities for their farms and orchards, for the especial purpose of making an experiment upon the patience and perseverance of the committee; but we are happy to state that our fidelity to the trust committed to us was not shaken by the discouraging aspect of the roads in certain places, and that the physical obstructions, such as rocks, stumps and ditches, vanished before unconquerable resolution, thus illustrating, in one sense, the truth of prophecy, that, in the honest and fearless discharge of duty, the crooked shall become straight and the rough places be made plain.

The position occupied by the farmers of the county, in the social organization, is truly honorable. So far as we could judge from the familiar intercourse into which we were brought by the nature of the service we were deputed to perform, there is no class of the people more respected and respectable; none more happily exempted from pecuniary embarrassments; none more fortunate in the possession of that personal independence, which grows out of severe training in moral principles and good habits; none more contented and happy. They seem to

enjoy that desirable freedom of mind and circumstances, which naturally attends a position above the fear of want, and at an equal distance from that superfluous wealth that brings care and anxiety to its possessor. Their dwellings are the abodes of innocence, peace, and plenty. The committee have great pleasure in acknowledging, in this public manner, the generous hospitality with which they were entertained, whenever their convenience permitted them to partake of a meal or a lodging at the house of a farmer.

The pleasure which our predecessors have expressed on former occasions, under the conviction that the practice of agriculture was gradually, if not rapidly, improving in this country, has been realized by the committee, in the examinations of the present year. The movement of enlightened and scientific husbandry is onward. Yet there is room left for improvement; and, should the spirit of emulation, that now exists, continue to prevail, we trust that our successors will be enabled to make reports still more satisfactory to themselves and honorable to the yeomanry of the county.

Applications for the society's premiums were made by twenty-eight individuals, namely, five in Concord, four in Lincoln, two in West Cambridge, two in Billerica, one in Dracut, one in Chelmsford, one in Pepperell, one in Groton, one in Sudbury, three in Framingham, one in Ashland, one in Hopkinton, three in Marlborough, and one in Brighton. The premises of two of the applicants were not visited by the committee; one, because he had violated a well-known rule of the society, regulating the distribution of premiums, and thereby forfeited his claim to a premium; the other had misapprehended the object for which a premium was proposed.

FARMS.—In awarding the premiums on farms, the committee have endeavored most scrupulously to regard their instructions, by taking into consideration the general appearance of the premises, the nature of the soil, and the amount of labor necessary to bring it into a state susceptible of tillage; the mode and expense of cultivation, and the quantity and value of the produce. Our examination has resulted in the assurance, that the progress of enlightened skill has not been slackened, that emu-

lation has not slept, that industry has not labored in vain. This is made manifest by the number of new orchards that are annually planted, the acres of peat and bog meadows that are annually reclaimed, and the beautiful and substantial stone walls that enclose fields and mowing lots, in which the material was once embedded and could be removed only by the application of gunpowder.

The committee have awarded the first premium on farms to that of George Pierce, of West Cambridge. This farm consists of about forty acres. The soil, except about four acres of swamp, is of a sandy loam. Two acres of this swamp has been cultivated, for the first time, the present season; the remainder is thickly overgrown with white birch, sprung from the stumps of a previous growth. The farm is cultivated for the express purpose of supplying vegetables and fruits for the market in Boston. There are two peach orchards on the farm, one of which contains about eight hundred trees on three acres and a half. These were all procured from New Jersey, and were set out in the spring of 1846. Many of them have borne fruit. The spaces between the rows are planted with melons, beans, and cauliflowers. The beans had been gathered in before the examination of the committee, and the vines thrown around the roots of the peach trees. The soil of this orchard was in a high state of cultivation before the putting in of the trees, in 1846, but has since received no manure, except a shovel-full placed in each of the melon hills, twelve feet apart, at the time of planting. Some acres produce tomatoes, on others are now growing celery, cauliflowers, cabbages, spinach, corn, potatoes, and (what the committee have nowhere else seen cultivated for the market,) dandelions. In the judgment of the committee, there were about three acres covered with this vegetable, (which generally passes for a worthless weed,) and which affords a rich return for the labor and expense of cultivation. A large portion of this farm has produced three crops this season: *first*, radishes and early peas, *second*, potatoes and cucumbers, and next, celery, cabbages, &c. The following statement of the expenses and value of the produce was given to the committee, viz:—

Hands employed from April to October, at an average of \$16 a month,	\$672 00
Labor paid by the day,	80 00
Board of men, at \$10 a month,	420 00
Night soil from ten vaults,	30 00
Manure from one stable in Boston,	400 00
Teaming the same,	300 00
Manure from one stable in Charlestown, the produce of 44 horses, at \$10 a horse, delivered on the farm,	440 00
Manure from Porter's stable in Cambridge, 30 cords, at \$5 50 a cord,	165 00
	<hr/>
	\$2,507 00

The proceeds of sales, from March 3d to September 23d, as rendered by the market-men, of which a daily account is kept, \$4,544 79, leaving a balance of \$2,037 79 in favor of the farm, exclusive of all the crops now on the land, probably worth as much more. Mr. Pierce generally manages so as to have his manure from the stables brought at a time when it can be spread and ploughed in. He makes no compost but what is manufactured by two hogs. His domestic animals are one or two cows and three horses, used for ploughing and transporting his fruit and vegetables to market.

The second premium is awarded to Ebenezer Davis, Jr., of Acton, from whose statement the following abstract is derived. Mr. Davis's farm contains about 140 acres. It is generally of a light, sandy soil, and some of it too poor for cultivation. About 60 acres are woodland, 30 are pasture, and about 50 are under cultivation. He raised last year (1847) 750 baskets of sound corn from ten acres, supposed by his neighbors to overrun 400 bushels when shelled,—not an extraordinary crop, but a very good one, considering the nature of the soil, and the manure and labor expended. The field was grass ground, ploughed in the autumn and cross-ploughed in the spring. His manure was composed, at first, of one fourth green stable manure and three fourths peat or mud, dug in the autumn before used. With these materials he worked in small quanti-

ties of plaster, ashes, and salt. On ten acres of newly broken ground, he had 154 bushels of rye; on six acres, 200 bushels of oats; on three acres, 500 bushels of potatoes, with no manure but plaster. More than half of this potato crop was *diseased*. Among the corn were raised 12 bushels of beans and 6 cords of pumpkins. He cut 30 tons of hay; kept two cows and a horse through the summer; sold \$11 worth of milk and \$20 worth of butter, besides the supply of these articles for his family. He stall-fed a pair of oxen and three cows, from the first of December till March. He kept eleven hogs through the winter, which sold, in the spring, for \$100 more than they cost him in the autumn. In addition to these, he wintered nine cows, six oxen, and a horse. The milk sold in the winter amounted to \$75. He has a nursery of fruit-trees, occupying two acres and a half, from which there were considerable sales, but of the expense and profit of the nursery he had made no estimate. From the few trees in bearing, the sale of apples amounted to \$50. His hired help, Mr. Davis, stated to be equal to three men for eight months, at \$15 a month, and one man, at \$10 a month for the other four months of the year. The product of the farm, beyond the supplies for his family, is stated as follows:—

200 bushels of corn,	\$200 00
200 bushels of oats,	100 00
125 bushels of rye,	125 00
Potatoes,	100 00
Straw sold in the barn at \$8 a ton,	105 00
Milk and butter in summer,	31 00
Milk in winter,	75 00
Pork,	100 00
Apples,	50 00
Beans,	20 00
Fattening cattle,	60 00
	<hr/>
	\$966 00

Mr. Davis has made considerable improvement on his farm during the year. A barn, 50 feet by 36, 15 feet posts, he had

raised 18 inches, shingled and clapboarded it, and made a cellar under the whole. The cellar was divided in the centre, lengthwise, by a substantial partition,—one half to be used for manure, the other for keeping roots and fruits. He set 200 apple trees in the spring, and built 30 rods of stout stone wall. At the time when the committee made their visit, the second week in September, there were growing 16 acres of corn, 2 of potatoes, and 2 of ruta bagas. He had raised 4 acres of oats, and cut 40 tons of English and 4 of meadow hay. A portion of his farm, 50 acres, being mostly a worn-out and stony pasture, he purchased in the spring of 1845. Of this portion, he had ploughed and brought into a tolerably productive condition, 16 acres.

The third premium is awarded to Charles Stearns, of Billerica, who owns a small farm situated on the southwesterly side of the old Middlesex Turnpike, in a region whose physical features would discourage and defeat all ordinary attempts at improvement. It is enclosed by neat and substantial stone walls, and has produced, the present year, 16 tons of hay, 30 bushels of rye, 30 bushels of corn, and 100 bushels of potatoes. The labor has been all done by Mr. Stearns and his two sons, the eldest of whom is about 14 years old; and they have earned \$70 in the last six months by laboring elsewhere. The statement of the produce may seem small to those who have not examined the premises, but the committee had no hesitation in believing that the rewards, which the society proposes for the exercise of labor, could be nowhere more appropriately bestowed.

Two other farms were presented for premiums. One of them offered by Jabez Huntington, of Marlborough, had already received the second premium, and, consequently, was a candidate only for the first; and the committee would willingly have awarded it, had not the farm at West Cambridge outrun all competition. Mr. Huntington gave to the committee an interesting statement exhibiting, in detail, the improvements he had made on the farm,—which he had owned eleven years,—in the clearing up of brush-wood, the reclaiming of brake-swamps and bog meadows, the construction of stone wall, (425 rods

from 3½ to 5 feet high,) the erection of new buildings, and the repairing of old ones. He had hired help in laying his wall, but worked out for others with his team enough to balance all that he paid to his hired men. He had made and repaired a great many farming utensils. Mr. Huntington is, in the truest sense of the terms, both a practical farmer and a practical mechanic. The repairs on his buildings were chiefly done by his own hands, and he had built two wagon-bodies, a large sleigh, with double runners, and two wheelbarrows, the iron as well as the wood-work of the whole. The committee were well satisfied with the results of Mr. Huntington's industry and skill, and can hardly doubt that he will obtain the first premium at no distant day, if he should renew his application.

The other farm referred to, is also in Marlborough. Much improvement has recently been made on the land, and in the farm buildings; but the proprietor was absent when the committee made their visit, and their examination was consequently very imperfect and unsatisfactory.

RECLAIMED MEADOWS.—In assigning the premiums for reclaimed meadows, the committee may have failed to do exact justice. In some instances, it was difficult to decide where the preference should be given. There were five applicants, and the committee had but four premiums at their disposal. Regretting that either should be disappointed, where all were deserving, the committee felt no little hesitation in deciding which of two applications to reject.

The committee submit, as part of their Report, the following extracts from the statements presented to them, by the several applicants, to whom they have awarded premiums.

From J. B. Farmer, Concord.—The piece of bog meadow that I have called your attention to, has been reclaimed in the following manner:—In the spring of 1835, I let out about one half of the piece, and gave the whole crop for breaking it up; the other half I dug up with my own help, and carried off the sods. The whole piece was planted with potatoes; the crop was sufficient to pay the expense. The winter following, I hired a man to gravel it; he covered it two and a half inches deep, at an expense of about \$9 an acre. The last week in

June, 1836, I sowed it with barley and grass seed, after having dug over about one half of the piece, by way of experiment, with manure forks, to the depth of about eight inches, mixing the mud and gravel together. The result of this experiment was a tremendous growth of barley straw, so great that it lodged, and did not fill near as well as the other part that was not mixed, mud and gravel together. That part filled well, and there was a good crop, but the amount I cannot tell, as it was put on the mow and thrashed with other barley. The grass consisted of 1 peck of herds-grass and half a bushel of red-top seed, as is my rule, per acre. The crop of hay, this year, was 3 tons per acre. The whole amount of manure that has ever been put upon the two pieces, is 13 loads, viz: 1 load of litter when planted with potatoes, and about half a pint of ashes to each hill. In the spring of 1837, I put on 3 cart-loads of compost; in the spring of 1838, 6 cart-loads. The loads did not contain more than 25 bushels each. The difference in the growth of grass on the two pieces experimented on, is greater now than it ever has been before. The mud in this part of the meadow varies in depth from 2 to 4 feet, and is fine, black, and crumbly. The sub-soil is a fine, white sand, mixed with a very little clay, but not enough to make it stick together when dry.

In my opinion, the great secret of reclaiming bog meadows, is in thoroughly draining; if that is not done, it will be but a short time before the poor and sour kinds of grass will take the place of the better. This I have found, universally, to be the case when it was not thoroughly drained; and, to prevent their intruding, I deem it necessary to dig a ditch all round the piece to be reclaimed, at the very outer edge of the meadow, to the depth of about 3 feet, and of sufficient width to work in easy; then stone it up to within 12 or 15 inches of the top, making what is usually called a blind ditch. This method of draining, (with a main centre ditch to be kept open,) will usually drain any meadow, when the hard land that surrounds it is alluvial, and the sub-soil a fine, white sand. In such cases, the level of the water is nearly parallel with the surface of the ground; but, when the meadow is surrounded by, or the water comes from, a ledgy hill, and the sub-soil is a mixture of coarse gravel, clay,

and small stones, the water seems to rise almost perpendicularly, and must be taken from each spring as best it can. But, as meadows and surrounding lands vary so much, I deem it impossible to lay down any rule that will be applicable to all cases, except saying, *keep off the water*.

From William Buckminster, Framingham.—The first lot of bog meadow that I showed you, on my farm in Framingham, has a peaty surface, from 1 to 2 feet in thickness, and a substratum of sand. For one hundred and fifty years, this land produced annual crops of meadow grass, and, for fifty years past, this has been of poor quality, a specimen of which you saw uncut. Some part of the meadow has produced from 10 to 15 hundred of hay per acre. It was scarcely worth the labor of cutting and making.

My mode of converting this meadow to bear English grass was to drain it by ditches four rods apart, and dig to the depth and width of three feet. I dug them, and let the contents lie on the banks for one whole year previous to spreading; and, on spreading the mud, I added to it loam enough to cover completely all the grass which grew on the ground, carted from the adjoining highland. I left but little loam on the banks where the mud had lain, for the natural grasses were completely dead, and needed no covering. By leaving the grass between the ditches uncut, I find it much easier to bury the whole and thus kill it, than when I cut the grass and make hay of it. For, in some cases, one ox-load of thirty bushels will cover one rod square. When the grass is cut, it does not die without a deeper covering.

The cost of covering one acre where the bank is high, and where the meadow bears up the team, is not very great. The ditch mud is a great help; and the ditching costs but twenty-five cents a rod, job-work. One good man with a yoke of oxen will cover an acre well, under favorable circumstances, in eight or ten days. One of the acres which you saw was covered at an expense not exceeding twenty dollars, in addition to the ditching.

I sow my grass seed in the last week of August, or the first of September, spreading on the surface fifteen to twenty ox-loads of compost manure (thirty bushels in a load) per acre;

and I often obtain two tons of good hay from the same at the first cutting. When the land is well dressed with compost, it will yield at least one ton per acre of rowen-hay, making three tons per acre. But such crops are not usually obtained without a new dressing every second year. Manure is essential here as well as on highlands; but I think one load of manure here will do me twice as much service as a load on high and dry land. I have treated the five acres which you viewed in the mode above stated; and, for my land, this is the best mode that I have seen; for the highland earth carted on will prove useful for all time to come. The land now bears any kind of team well, and it may be easily turned over with a plough where the wild grass shows itself too conspicuously.

The second lot which you viewed is a swamp that bore lofty pines, maples and yellow birch. I cleared it of the remains of its timber and wood three years ago, cut the bushes as close as possible, and let the fire run through it in August, 1846. In September, I sowed herd's-grass and red-top, and went over the ground with a common harrow. The peat muck here is ten feet deep and quite rich. I ditched the four acres partially, and trusted to the ashes to give me grass. The large stumps were not taken out, and they now occupy one fifteenth or twentieth of the surface. Last year, I had a pretty good swarth of English grass. Last winter, I carted on fifteen loads of gravel per acre, and spread it. In March, I sowed clover. The land yielded twice as much this season as at first. The product was one ton per acre by estimation, and the feed that is now on it is valuable. The grass was not mowed till August. The swamp brake, a species of fern, grew here to the height of six feet. It was feared that this would yield reluctantly to the valuable grasses; but it did not prove troublesome. In June, the common hoe was applied, and we have now no fears of the brakes. People who were well acquainted with this old swamp thought it could not be drained; but we found that one ditch of fifty rods, and another of thirty, carry off most of the surplus water. These four acres have not cost much in reclaiming. The maples only throw up but a few shoots, and they are soon put an end to by beating them off from the stumps.

The third lot that was viewed by you on the south side of the road, has cost the most money. On this, ditches four feet in width and four in depth, have been cut, and the muck has been spread so as to cover the space (4 rods) between them. One acre and a half of this has been prepared this season, and the seed is now sown. Most of the stumps have been cut out, and the butts are sawed for fencing. No manure will be put on this ground. It is already rich enough. This swamp land is not worth \$8 per acre to be kept for wood, as pine stumps produce no sprouts, and the maple and the black birch are of slow growth. But I consider this the richest soil that I have on my farm, of 150 acres.

I sow but one peck of herd's-grass per acre, and two or three pecks of red-top, according to its quality. Four pounds of clover seed are sown in March or April, for fall feed.

From Amasa Sanderson, Groton.—The piece of bog meadow I requested you to examine, is described as follows:—Quantity, a little spot of four acres; bottom, deep meadow soil, except on the margin, where it borders on the hard land; native production, a heavy growth of white pine and maple wood and timber. When I purchased this meadow, two years ago last April, it was covered with brush, a few timber trees, a large body of heavy stumps, brake, bogs, and other rubbish. It was valued to me, at that time, at \$50 per acre.

Method of reclaiming:—I first cut all the brush and other small trash; when sufficiently dry to burn, I put fire to it, and it continued to burn for several days, and consumed a very large amount of rubbish. After the fire was extinguished, I commenced removing what it left of wood, timber, and stumps, and I truly think that not less than one hundred cords have been removed. I then planted a part of it with potatoes.

I commenced clearing the meadow, single-handed, in August, 1846; in September and October, of 1847, a crop of potatoes, of little short of 550 bushels, was taken off from it, of the first quality, worth not less than \$250, I sold for cash to the amount of rising \$200. The improvement on the original value is not less than one hundred per cent. Taking the improved value of the land and the value of the first crop, we have an aggregate

of \$100 per acre for the four acres, within a few weeks more than one year from the time I commenced clearing it. I keep no team, except a horse, and the cash expense of improvement has not exceeded \$25. Myself, and son, now 17 years of age, have performed the great amount of labor requisite. About one acre of it, I sowed last spring, with oats and grass seed; the most of the remainder I planted with potatoes, but the present season has been far less favorable to a large crop than last season. A part of my present crop promises well, but a part of it will be very light. A person, unacquainted with the original condition of this meadow, would find it difficult to judge correctly of the amount of improvement made upon it. Many of my neighbors thought it next to impossible to subdue it.

From Elbridge G. Hayden, Concord.—The piece of meadow, to which I have called your attention, contains about 5 acres. I came in possession of it in the spring of 1846; it had been drained, and bore a small quantity of poor hay. I ploughed about half of it, and spread gravel on top; the rest I graveled without ploughing, and then sowed grass seed. That which was graveled without ploughing has done the best. The first dressing of manure was light, not exceeding ten loads of good manure to the acre. The crop of hay, I should think, was about 7 tons. In the fall of 1847, I spread on a good dressing of manure, and the crop of hay the present season, on the 5 acres, I should judge to be at least 14 tons.

COMPOST MANURE.—In relation to compost manure, the committee were in no doubt as to the assignment of the first premium, and awarded it to the gentleman who not only exhibited the largest quantity, but whose operations in the manufacture appeared to them to be the most scientific and successful. Almost every individual applicant had a method peculiarly his own. There were several applicants, all of whom had been industrious and economical in the collection and preservation of materials; but, as we had only one other premium to dispose of, it has been given to an applicant who had not the largest pile, but whose pile appeared to be of the richest quality.

The following communication from *Ebenezer Richardson, of Pepperell*, describes both his method of making compost manure and of cultivating fruit trees.

The compost manure, which you examined on my premises, has been made since the first of June last. It is composed of the droppings of eight cows and meadow mud, in about equal quantities of each. Some weeds are thrown in with the mud, and five hogs are kept in the cellar of the barn where these ingredients are deposited. The cows are kept directly over the cellar, and all their urine falls directly upon the manure. The cellar is 40 feet long by $16\frac{1}{2}$ feet wide and 9 feet deep. There is not less than 30 cords in the cellar. You saw another heap of manure in the barn-yard. This is made from the dung from a yoke of oxen and a horse, mixed with mud and peat.

The orchard which you examined contains between four and five acres. The soil consists of broken slate and light clay. There are 150 apple trees in the orchard, which are manured sufficiently to keep them in a healthy state, but not to force them. They are all Baldwins, Porters, and Orange Sweetings. They are set 40 feet apart.

There are 125 peach trees set between the apple trees, and are manured like the apple trees. I keep about two quarts of ashes about the roots of all the trees, and have not been troubled with borers or any other kind of insect. The peaches are all seedlings, and are of only two kinds, the Yellow Rare-ripe and the Golden Rareripe.

From Daniel L. Giles, of Lincoln.—I keep 11 cows, 1 yoke of oxen, and 1 horse. There are at least 30 cords of compost in the heap you examined, all of which is made from the droppings of these animals, mixed with about an equal quantity of meadow mud. I have no barn cellar, and the manure is all made in the yard. The whole was made during the last winter. The bottom of the yard is perfectly hard. It has a hollow in the centre, into which most of the liquid manure is conveyed, and there mixes with the other materials, which form the compost.

FRUIT TREES.—The fruit trees presented for premiums were numerous, and, with one or two exceptions, the apple and peach trees were about equal, in their just claims, to the consideration of the committee. The regulations, in regard to peach trees, direct that those set out *since* the year 1845, and

which shall be in the best thriving condition in 1848, shall be subjects for premiums. The quality of the fruit is not, therefore, to be considered, and, if it were, very few trees set out within the time prescribed would be in a bearing state, in the autumn of the present year. Owing to this restriction, the committee were not at liberty to award a premium on peach trees to a gentleman, who, beyond all doubt, had the best trees and fruit which fell under their examination. The committee viewed several plantations, both of apples and peaches, which do great credit to the cultivators, and which will be fair and probably successful competitors for premiums another year.

From John Gordon, Brighton.—In the piece of land occupied by me, as a fruit garden, there is about two acres; nearly three fourths of it is a light, sandy loam, the sub-soil is mostly a yellow loam. The other part, when I commenced laying out my garden, in the spring of 1842, was composed of a stiff, clayey substance. I should think that a considerable part of it was the wash from the road, with a sub-soil so hard that I had to use a pick to stir it. I have, for the last four years, spaded it every spring, and have gone a little deeper every year. When I set out my trees, I dug a hole about 2 feet deep and 3 feet wide, and have, usually, put from 1 to 2 wheelbarrow loads of compost manure to each tree, and a good dressing of manure every spring. I have, in this piece, about 40 apple trees, 60 peach trees, 40 plum, and 400 pear trees. About half of the pears are on quince and the rest on pear stocks.

I have another piece of land, on which there is about 60 apple and 70 peach trees. This land, in 1840, was, most of it, very rough, and I considered most of it hardly worth cultivating. I think it cost me from 1 to 2 hundred dollars to dig, blast, and carry off the stones. Some of them were so large, that it took a number of loads of gravel and loam to fill their places. I then spread a good coat of manure, and ploughed it in as deep as I could, and have manured it well, every year since.

I headed in the apple trees, four years, and the peach trees, three years. I have endeavored to keep them as free from insects, as I could spare time to do. I have twice used a wash,

composed of 7 lbs. of potash, $\frac{1}{2}$ peck of lime, and $\frac{1}{2}$ bushel of cow dung, mixed in a barrel of water. After examining, by scraping and digging out the borers, I have put coal and wood-ashes mixed, around most of my peach trees, every spring.

From Leander Crosby, Billerica.—My apple trees were set in the spring of 1842, in rows, two rods distant from each other. In setting, we used no manure, but filled the holes with the soil which was taken out. We were very careful to have the trees set deep and the dirt trodden compactly around the roots, in order to be more sure of their living. This, I think, was a great error, from the fact that the trees made a very small growth for the first two years, and have since thrown out roots near the surface of the ground, two or three inches above the older roots. We used no stakes to support them, except in a few instances, where the tree was much inclined to grow crooked, and have not pruned them very close, always leaving some small twigs to be taken off the next year.

The ground was kept up two years, and then laid down to oats and grass. In two years more, it was ploughed again, and planted with potatoes. These were dug while the tops were green, and the tops were placed between the rows and covered, as we dug the potatoes. They were completely rotted by the next spring, so as not to be in the way of the plough. This made the ground more light and lively than it had been before, or has since been, and was, I think, an advantage to the trees, for, in a small part of the field, there was an earlier kind planted, which were dug without the tops being covered, and we could perceive a difference in the ground and trees. The potato crop has been succeeded by a crop of cucumbers, which, we think, draws less from the soil than corn, or any root crop.

While the trees were in grass, they were manured late in November, with manure from the barn cellar, three shovels full put to each tree, and dug in, the next spring, over a surface of about three feet from the body of the tree. They were washed, each of these successive years, in June, with potash water, strong enough to bear an egg.

For the premium on cranberries, there was but one applicant. The plantation that was exhibited, did not, by any means, sat-

isfy the committee that the proprietor was justly entitled to any portion of the premium offered.

The committee cannot close their Report, without referring, in terms of the highest approbation, to the fruit garden, or, more properly, farm of John Gordon, of Brighton, and commending it to the notice of all the fruit-growers in the society, as a model for imitation. Some of the finest specimens of the apple and the peach, which came under our notice, were on his premises; and his pear and plum trees were the only specimens of these fruits which have been deemed worthy of a premium.

The committee submit the following, as the result of their best judgment in the distribution of the society's premiums:—

Farms.

First premium to George Pierce, of West Cambridge,	\$25 00
Second " " Ebenezer Davis, Jr., of Acton,	20 00
Third " " Charles Stearns, of Billerica,	15 00

Reclaimed Meadows.

To Jacob B. Farmer, of Concord, 1st premium,	15 00
" William Buckminster, of Framingham, 2d do.	12 00
" Amasa Sanderson, of Groton, 3d do.	8 00
" Elbridge G. Hayden, of Concord, 4th do.	5 00

Compost Manures.

To Ebenezer Richardson, of Pepperell, 1st premium,	10 00
" Daniel L. Giles, of Lincoln, 2d do.,	5 00

Fruit Trees.

For the best apple orchard, first premium to Ebenezer Richardson, of Pepperell,	15 00
The second, to Leander Crosby, of Billerica,	12 00
The third, a copy of Emerson's Forest Trees, to I. C. Freeman, of Framingham.	
For the best peach orchard, the first premium to Joel Britton, of Concord,	10 00

The second, a copy of Emerson's Forest Trees, to Charles Twitchel, of Ashland.	
For the best pear trees, the first premium to John Gordon, of Brighton,	\$10 00
For the best plum trees, the first premium to John Gordon, of Brighton,	5 00
The second, a copy of Emerson's Forest Trees, to the same gentleman.	

Respectfully submitted by the Committee,

JOS. T. BUCKINGHAM, *Chairman.*

PLOUGHING—DOUBLE TEAMS.

Ten teams appeared on the field, and struggled hard for the prizes; and, although the competitors were all tee-totalers, some of them thought they had enough to contend with without quite so much *cold water*, it raining fast during the trial. The committee awarded,—

To Francis Wheeler of Concord, plough, Prouty & Mears' Centre Draught, No 72, held by a boy 15 years old, first premium,	\$10 00
" Joseph Darby, of Concord, plough, Ruggles, Nourse & Mason's, Eagle, No. 24, second premium,	7 00
" Nathan Brooks, of Acton, plough do. No. 20, third premium,	6 00
" Joseph D. Brown, of Concord, plough do., No. 20, fourth premium,	5 00

MILCH COWS.

There was awarded, for milch cows,—

To Thomas E. Upton, of Wilmington, first premium,	\$8 00
" Moses Brown, of Bedford, second premium,	6 00

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To George Heard, of Wayland, third premium, .	\$4 00
" Jabez Gowing, of Concord, fourth premium, .	3 00
" H. C. Merriam, of Tewksbury, for three Durham cows, a gratuity of	2 00
" To Elijah Wood, Jr., of Concord, for one cow, a gra- tuity of	2 00
" Samuel Staples, of Concord, for one cow, a gratuity of	2 00

Thomas Upton's Statement.

My cow "Lilly" calved about the middle of April. In June, she gave 18 quarts of milk per day, and made 13 lbs. of butter per week. In September, she gave 14 quarts of milk per day, and, during the month of September, made 41 lbs. 9 oz. of butter. She was nine years old last spring.

George Heard's Statement.

The cow which I offer for premium dropped her calf the first of May, which was taken from her in two or three days. Her milk was kept by itself the second week in June, and from it we churned 12 lbs., and a little over, of good butter. Her average quantity of milk was 14 quarts per day for two months or more. In the hot weather at the middle of July, she produced 10 lbs of butter in one week. Her milk, when not at the largest flow, weighed 34 lbs. per day. She came out thin in the spring, and has run with four other cows in a very dry pasture after the drought came on.

Elijah Wood Jr.'s Statement.

The cow offered by me for premium is eight years old. She had a calf in May. She gave milk in June, an average yield

of 18 quarts per day, and, the last week in September, an average of $10\frac{1}{2}$ quarts per day. She was fed on grass alone.

Samuel Staples's Statement.

The cow I offer for premium is of the native breed. She had a calf in May which was taken away at one week old. She gave, at that time, 18 quarts of milk per day. She now, (October 2d,) gives about $10\frac{1}{2}$ quarts per day. During the seven days previous to September 24th, she gave $76\frac{1}{2}$ quarts, which weighed $188\frac{1}{4}$ lbs. She has had no feed but grass during this time. I have sold from her \$30 worth of milk each year for four years past, and had milk in plenty for my family, and have made as much butter as my family have used for four months in each season. The cow is 11 years old.

BERKSHIRE AGRICULTURAL SOCIETY.

THE anniversary of this society was held at Pittsfield on the 4th and 5th days of October last. The severe storm that prevailed on the Tuesday previous, did not prevent cattle starting for the exhibition from the extremes of the county. Wednesday afternoon presented an array of the various kinds of live stock upon the show-ground, but little inferior, in number or quality, to the exhibition of any previous anniversary.

The usual interest attended the ploughing match; seventeen teams engaged in the contest. Had the weather been good, so that teams from a distance could have reached the ground conveniently, it is supposed thirty teams would have entered the lists.

The address by Professor J. P. Norton, of Yale College, gave great satisfaction. It was scientific, yet intelligible to all, and highly instructive. His familiarity with the subject,—the composition of soils,—and his lucid mode of illustrating it, engaged the undivided attention of his hearers.

AGRICULTURAL PRODUCTS.

Of the various crops, upon which premiums are offered by the society, 154 have been presented for examination.

Of winter wheat, but 2 pieces were offered. This crop seems, at present, not to be much in favor with the farmers of the county.

Of winter rye, 16 fields were presented, all of which were good, most of them excellent. The crop is believed to be unusually heavy.

Indian corn appears to be a favorite crop with the members of the society, and one in which they take great interest. This is well attested by the care they bestow upon its cultivation, and the desire they manifest to procure the best variety of seed for planting. Thirty-four fields were examined, 17 of which ranged from 1 bushel 8 quarts to 1 bushel 24 quarts, per square rod, even measure, closely packed. Of the 6 pieces, for which the committee have awarded the regular premiums, the first 5 were of 12-row, 2 varieties, all in good condition for the time of year. The 6th and best was of 8-row variety, a heavy growth, but not as well ripened.

Of spring-wheat, 31 fields were offered, most of which were considered as being above a medium, and several of them as seldom surpassed. The same remarks will apply to the crop of oats, of which 28 pieces were offered; also to barley, of which 13 pieces were examined, and likewise to meslins. Of this crop, the committee found various mixtures,—oats with peas; rye with oats; oats with barley; and oats with wheat. The crop seems to be gradually growing into favor with the farmers, and is well appreciated by those who cultivate it.

Of potatoes, 11 pieces were offered. The crop is considered a fair average of former years, and, with some trifling exceptions, free from disease.

Six pieces of carrots, and 4 pieces of sugar-beets were presented, all of which promised fair; but the season was not far enough advanced to determine, with any degree of certainty, what the ultimate production would be.

Thus it will be perceived, that, with regard to crops, the committee are enabled to keep the same tone throughout—good—good; there are no failures. In the aggregate, it is believed that the crops considerably exceed what is usual. It is, truly, a year of abundance.

In their perambulations through the county, another subject, beside that of crops, pressed itself upon the attention of the committee,—the subject of improvement, the marks of which, in a greater or less degree, were strikingly apparent in almost every town. The swamps and waste lands that are being reclaimed from the dominion of desolation and the noxious gases,

and being brought, by draining and cultivation, into a state of usefulness and beauty, the highly cultivated fields, the neatness and the conveniences about many dwellings and out-buildings, and the elegance of some, speak volumes for the industry, the skill, and the taste of the farmers of Berkshire.

While our common country is making rapid advances to wealth and greatness, while her agricultural productions are yearly increasing, and have already increased to that degree, that millions in other countries may be fed from her crib; while this spectacle is before us, it cannot but be gratifying to the members of this society, and to the farmers of the county in general, to feel assured that our own Berkshire is not lagging behind in agriculture, but that her course, too, is onward. The committee would say to the farmers, relax not, but persevere in your praiseworthy exertions, until Berkshire shall become,—if, indeed, she is not already so,—the pride of Massachusetts.

For the best acre of winter wheat, to Oliver P. Dickinson, of Pittsfield,	\$6 00
For the best acre of spring wheat, to Solomon L. Russell, of Pittsfield,	6 00
For the best acre of winter rye, to Leonard Tuttle, of Sheffield,	5 00
For the best acre of oats, to E. I. Wenden, of Richmond,	5 00
For the best acre of barley, to Morgan Lewis, of West Stockbridge,	5 00
For the best acre of meslins, to Robert Campbell, of Pittsfield,	4 00
For the best acre of potatoes, to Samuel Lewis, of Great Barrington,	6 00
For the best acre of corn, to Charles Hinckley, of Lee,	6 00
For the second best acre, to Clement Harrison, of Adams,	5 00
For the third best acre, to Samuel Goodrich, of Stockbridge,	4 00
For the fourth best acre, to Nathan W. Hall, of Williamstown,	3 00

For the fifth best acre, to William E. Johnson, of Williamstown,	\$2 00
For the sixth best acre, to Thomas Wood, of Egremont, Colman's Agriculture, and	1 00

RALPH LITTLE, *Chairman.*

STOCK.

There were entered, for premiums, 1 yoke fat oxen, 6 yokes working oxen, 6 yokes four years old oxen, 12 yokes three years old steers, and 4 yokes two years old steers. Also, a larger number than usual of milch cows, 20 two years old heifers, and six calves.

HORSES.

The committee have discharged their duties with great interest and pleasure. While some other animals may be considered more indispensable, the horse is, by far, the noblest domestic animal. Man is never found in a civilized state without the horse. In the crowded city, in the field of agricultural industry, and on the vast desert, wherever civilized man is found, the horse is his companion. No matter how many other means of conveyance may be invented, the horse will ever be the constant companion and servant of mankind. There is room for great improvement in the breed and condition of horses among us; and, if the committee can judge from what they have seen on this occasion, they believe that the premiums awarded by this society, for horses, are attended with highly beneficial results.

For the best breeding mare, to Timothy Benedict, of Pittsfield,	\$6 00
For the best stud horse, to A. L. Tuttle, of Sheffield,	5 00
For the best pair of farm horses, to Silas B. Colt, of Pittsfield,	6 00

The committee deem it no more than just, to express their

unanimous opinion, that the horses of Mr. Colt are decidedly superior to any they have ever seen exhibited at our fairs. The horses of Seymour Wilcox, of Lanesborough, also deserve special notice.

CALEB N. BEMENT, *Chairman.*

AGRICULTURAL IMPLEMENTS.

A new and valuable improvement in mail axles was exhibited to the committee, from the iron works of L. Pomeroy & Sons. This improvement, combining all the advantages of the most modern style of mail axles, obviates the only objection heretofore made to them, in attaching the wheels to the axle by a *screw*, instead of by *bolts*. The committee regard this improvement in axles as deserving the encouragement of the *farmer*, both for its labor-saving qualities to the animals employed in draught, and for its greater safety. Made from iron of great strength and toughness, fitted to run within the boxes, without friction, and retaining within its chambers the oil, which, in the old-fashioned axles, is constantly dripping upon the wheel, and thus becoming a source of annoyance and injury, this axle becomes a valuable, labor-saving article for agricultural purposes, as well as a specimen of excellence and beauty in mechanism. In the language of Edward Riddle, of Boston, a gentleman more conversant, perhaps, with the changes and improvements in axles, than any man in the country, "this axle, from its valuable properties over all axles now in use, whether for pleasure or business vehicles, deserves to be universally used."

We award, on these axles, a premium of . . . \$5 00

G. W. MEAD, *Chairman.*

PLOUGHING.

It is usual, on occasions like the present, to congratulate farmers on the great progress that has been made in this de-

partment of agriculture, and on the degree of excellence that has been reached. The committee, at this time, offer a few remarks on what remains to be done in the way of improvement. The work we have seen to-day approaches near to perfection, according to the general standard. The whole surface was thoroughly turned over, the furrows were straight, the depth and width well preserved. The only noticeable defects we have remarked, on this and other occasions, being, that the dead furrow is not, in all cases, handsomely cleared up; and more care might be well bestowed in making the ends of the lands even.

Although there may be some practical objections to the plan, it is worthy of consideration, whether each ploughman should not be required to stake a land and open the first furrow for himself; a requirement which would be a sure test of the skill of the workman, and of the care with which his team is broken. According to the present plan, a superior plough may, and frequently does, make all the difference observable in the work of two men, while the skill may be on the losing side.

It has been remarked, that this ploughing is nearly perfect, according to our standard. It remains to inquire in what respect our standard is imperfect. The answer is in the fact that, if an average-ploughed field here be compared with one in many foreign countries, where the ploughs are greatly inferior, in all respects, to ours, we shall find the comparison tells against us. This difference is less observable in sward-ploughing, which is necessarily the only species of ploughing practised at ploughing matches. In the art of ploughing sward land *flat*, we may challenge competition. Whether flat furrows, even in sward, are the best, is an open question. Without entering into the merits of the two systems, it may not be out of place to mention, that, in consequence of some remarks in favor of this method, by the committee of last year, the subject was discussed by the North Stockbridge Farmers' Club, when it appeared that the nearly unanimous opinion was in favor of the shingling or lapped furrows.

It is, however, in the ploughing of mellow land that we are most in fault; which arises, on one side, from our pursuing the same system on the fallow that we do on the sward, of

ploughing wide and reversing flat; and, on the other hand, from the little care that is used in staking out the field in a scientific manner, and according to a well understood plan. It is to be regretted, that neither of these subjects, fallow ploughing, or the staking out of fields, which are, at once, a school and a test of good ploughing, can come before the public at a ploughing match; but a means might be devised whereby premiums should be offered for the best and most scientific fallow of five or ten acres, on the applicant's own farm, in the same way as we offer premiums for the best acre of corn or rye. It is believed that the best results might follow the adoption of such a plan.

SAMUEL G. WARD, *Chairman.*

BUTTER AND CHEESE.

The committee have been much gratified with the quantity and quality of the dairy and other products, presented for their consideration. The reputation of Berkshire, for butter and cheese, will certainly be maintained, and defy competition, if our farmers' wives and daughters continue to bestow the same attention and skill now manifest in their management. Yet we cannot forbear suggesting, that butter, for long keeping, requires to have the butter-milk *thoroughly* worked out of it. It is a mistaken notion, with some, that salt is the great preservative. Butter, not thoroughly wrought, soon becomes rancid in warm weather, even when salt is used in abundance.

ALEXANDER HYDE, *Chairman.*

HAMPSHIRE, FRANKLIN, AND HAMPDEN AGRICULTURAL SOCIETY.

THE annual cattle-show and fair of this society took place at Northampton, on the 11th and 12th days of October last. The show, as a whole, was inferior to many former exhibitions. The number of cattle was smaller than usual, and they were generally of ordinary quality. As an exhibition, the ploughing match was inferior, only twelve competitors being in the field, when there should have been twenty. The exhibition of horses was large and very good. The show of fruits surpassed that of any previous anniversary; but, of vegetables, it was meagre and unworthy of this rich valley.

The address was delivered by Professor John P. Norton, of Yale College. His subject was the soil,—its structure, physical organization, and chemical properties. At the dinner-table, remarks were made by several individuals. Professor Norton, in answer to a call, remarked, that there was one point to which he wished to call the attention of farmers. It was, that the present meeting reminded him of similar meetings in England and Scotland,—a feature which he wished could be introduced among the farmers of this country. In those countries, farmers are in the habit of meeting once a month, or oftener, in the winter season, for the purpose of discussing topics immediately connected with agriculture. They have a subject selected for discussion, and each comes prepared to give his views on it. These meetings are of great importance. They collect a vast amount of valuable, practical information. A person might obtain more real knowledge in one hour, in such a meeting, than in many years from other sources. The result would be, that our farmers would direct scientific men to those points which most needed the application of patient labor and re-

search for improvement. In this way, an almost incalculable amount of benefit might be imparted to the farmer, and he earnestly recommended the introduction of such meetings among the farmers of the Connecticut valley.

HORSES.

The committee suggest to farmers the expediency of more care in the rearing of colts. Those are said to make the best horses, which are weaned after six or seven months sucking. For the first year, particular attention should be given to their food, which should be bran twice a day, with a little hay, sufficient water, and pasture in pleasant weather. The second and third years, the pasture is preferable from May to November; and, in the winter, hay mixed with barley or oats wetted. When four years old, colts may be taken from the pasture and fed on hay. After weaning, attention should be given to the temperature of the stable, that it be not too warm. The litter should always be fresh and often changed. Cleaning with straw is preferable to the currycomb, for the skin does not harden till the colt is two and a half or three years old. The breaking may commence at three and a half years of age, at first with merely wearing a light saddle a few hours every day. The colt should be led about by a leather strap (not by a curb) and be made to trot without a rider, on even ground, with only a saddle or harness on. When accustomed to this, a man may mount and dismount; for, until four years old, the colt will not be sufficiently strong to walk or trot with a rider on his back.

By careful attention to these points, the committee believe that many a noble horse may be raised, and, in reality, illustrate the description given by Camerarius, of a perfect horse:—"It must," says he, "have three parts like those of a woman,—the breast must be broad, the hips round, and the mane long; it must, in three things, resemble the lion,—its countenance must be fierce, its courage great, and its fury irresistible; it must have three things belonging to the sheep,—the nose, gentleness,

and patience; it must have three of a deer,—head, legs, and skin; it must have three of a wolf,—throat, neck, and hearing; it must have three of a fox,—ear, tail, and trot; three of a serpent,—memory, sight, and flexibility; and, lastly, three of the hare,—running, walking, and perseverance.”

The whole number of horses, entered for premium, was 78 stallions; 11 pair of horses for labor; 23 geldings; 5 breeding mares, with specimens of their stock by their side; 12 three years old colts, and 11 two years old colts.

JAMES W. BOYDEN, *Chairman.*

PLOUGHING.

The object of ploughing is two-fold:—First, to invert the surface, so as to cover up all green and other undecayed vegetable matter; and second, to pulverize the soil, in order to bring the particles into different juxtaposition, that fresh decomposition may be excited, thereby generating new food for the plants, and also to render the soil pervious to air, light, heat, and moisture, which is necessary to vegetable growth. The plough and the ploughing, which accomplish these objects the most thoroughly, are, of course, the best.

The complete inversion of the sod was the principal thing first sought in the plough. This has been accomplished in all the perfection, perhaps, that is desired. But, although the turf may be handsomely turned over, if it is left in its former hard and stubborn state, it is poorly prepared for planting. The soil must be pulverized. Of late years, public attention has been directed to this particular, in the construction of ploughs. Science and skill have accomplished much in this respect; they have arrived nearly, if not quite, to the perfection of spade husbandry. The modern plough certainly inverts the sod better than the spade; and perhaps it is not far from the truth to say, that a plough of the best construction, pulverizes the soil

quite as well as the spade. At all events, nothing short of this should satisfy the cultivator or the plough-wright.

The importance of pulverizing the soil cannot be too much regarded. The fact should always be borne in mind, that the impalpable powder is the only active part of the soil. No other portion has any direct influence upon vegetation. Jethro Trull, an English writer on agriculture, went so far as to say, that, if the soil is pulverized well, manure may be dispensed with. This remark is extravagant, but it shows how much importance this distinguished agriculturalist attached to a proper pulverization of the soil.

The depth of ploughing depends upon the character and depth of the arable soil. But it is an unquestionable fact, that the deeper the soil is stirred or loosened, the better will the crops bear a drought or a superabundance of moisture.

The utility of ploughing matches may be questioned by some. But no one, who is fully acquainted with the subject, will discourage them. An English writer says, that the face of the country, in many parts of Great Britain, has been strikingly improved by the change which good ploughing has effected, and much of this improvement is attributed to the influence of ploughing matches. The same degree of improvement has undoubtedly been observed in this country. We have recently been informed, by an observing agriculturalist, that there has been a great improvement in ploughs and ploughing, in this vicinity, within the last twelve years. All can remember when no one thought of ploughing turf land without a four ox-team and a driver; now the same work is very much better done with a single pair of oxen, or a pair of horses, and no driver. The generous emulation excited by ploughing matches, has led to the improvement in ploughs and in the use of them.

But, were ploughing matches of no benefit to the interests of agriculture, are not their social advantages ample justification for sustaining them? What is more gratifying, as an entertainment, than a spirited competition in the all-important branch of tillage?

The committee regret to say that, on the present occasion, the match was less spirited than usual, on account of the small

number of competitors. Only twelve teams entered the lists,—eleven horse-teams and one ox-team. But the regret of the committee, in this regard, was in part compensated by the excellence of the ploughing. It was all good, and deserves the highest commendation.

That the committee might judge as impartially as possible, they did not visit the ground until the ploughing was done; and they awarded the premiums to the lots, without knowing, at the time, by whom they were ploughed. The committee were generally of the opinion, that the ploughing which best prepared the soil for tillage was entitled to the highest consideration. They, therefore, paid less regard to the external appearance of the work than may have been customary heretofore. Agreeably to the principle here mentioned, the committee were, without consultation, nearly unanimous in awarding the first premium to lot No. 10. One of the committee, however, thought lot No. 13 entitled to this award. All admitted that the ploughman, in the latter, displayed great skill; the furrows were straight and well turned, and the last, or “clearing out,” furrow, was finely done, but the soil was not left so friable as in lot No. 10. Lot 26 was also well turned, but the last furrow was too deep. The same fault was observable in lot 25.

In conclusion, the committee would earnestly recommend to the society to offer, for the next anniversary, a portion of the premiums on the best *Stubble Plough*. They are of opinion, that the farmers generally are now in great need of a good plough of this description.

For the committee,

W. A. HAWLEY.

FRUITS AND VEGETABLES.

With the exception of apples, the exhibition was exceedingly meagre, and unworthy of this large and intelligent society. The crowd of people was immense, and it was interesting to

witness the desire manifested to look at the fruit. The exhibition of apples was fine; it would have done credit to any horticultural association in the country. But the pears, the quinces, the grapes,—the esculent roots and vegetables, that might have been brought in abundance by the farmers in the vicinity,—were not there.

If hundreds and thousands of people are interested to come to these shows, there should be a corresponding care in presenting something to gratify that interest, and worthy of the occasion, by those whose duty it is to make the collection. There seems to be a general impression, in the community, that, at such collections, nothing should be exhibited but *rare* or monstrous productions. This is a mistake; for it is more desirable and far better, that good specimens of good fruit and vegetables that can be found on the premises of every farmer, be collected together, than that extraordinary productions should be sought for. Specimens of enormous growth are interesting to show the richness of the soil which we till; but the specimens thus produced are often comparatively of little value for the table. The farmers in the vicinity should come to these fairs to exhibit their productions, and not to be spectators merely. All have something worth seeing, and if they would bring them together as they bring their fruit, the number of specimens would excite curiosity as well as the variety. A table, with a hundred covered plates of potatoes of the best sorts that are raised in the county, including the Hill's Early, the Kidney, the Carter, the Mercers, the Peach-blow, the Yorkshires, the Merinos, the Cow-horns, the Rohan, the Lady's Finger, the Blues, the Whites, the Yellows, with any new and uncommon varieties, would attract much attention, lead to discussion as to the merits of each sort, and be productive of much good to the cultivator. An exhibition of a table with 50 or 100 specimens of the best winter squashes, including the Marrow, the Butter, the Acorn, the Valparaiso, the various Crooknecks, the Paris, and the Mammoth, would be beautiful in the exhibition, and useful in its influence.

With a little pains, such a collection might be brought together with great ease at each exhibition. If a farmer has a

beet, a carrot, a cabbage, or a turnip, which is a monster, he will bring it to the fair; this is well, but half a dozen specimens of these useful roots would be equally so, if of good shape and ordinary size. The former are fit only as food for cattle, the latter add a rich variety to the vegetables for the table.

In some way, encouragement to do all this should be extended to the farmer. The distribution of six or eight hundred dollars a year ought to make this annual show both interesting and useful. Small premiums should be extensively awarded, and a larger amount should be appropriated to the horticultural exhibition. Riding over the county of Hampshire, the cultivators of fruit will be surprised to see how many naked door-yards are to be found, which, in a few years, might be filled with cherries, pears, peaches, and plums, beautifying the premises, adding profit to the labor, and pleasure to the possessor, in participating with his friends and family in the enjoyment of the best fruit.

It is often said, by way of objection, that the birds will take the cherries, and the boys will steal the fruit, if it is planted. But we say, cultivate till you supply the birds and the boys too; have a plenty for all, and induce every body to follow your example. Such examples are contagious. If all cultivate, who will there be to steal? And who will wish to steal, when he is invited to partake of all he may desire? In many parts of Europe, so abundant is the fruit, that the traveller is permitted to partake freely of what he finds on one side of the road, leaving the other to the proprietors.

As to the birds, the fee simple of all the minor fruits is given to them by their Heavenly Guardian and Protector, and we ought to be willing to cultivate to halves, seeing that they are so ready to gather their own share. It is very questionable if we are not more indebted to *them* for the care they take of the worms and insects, than they to *us* for the fruits they consume. If so, the pleasure they afford to the *eye* and the *ear* are delightful gratuities to us, which should induce us to look well to their comfort, and extend to them our protection from wanton cruelty and destruction.

It has been said, that he who makes two blades of grass

grow where one only grew before, is a benefactor to his race; none the less so is he, who plants a fruit tree where there was none, or who renovates a worthless tree by giving it a new top of good fruit.

The farmers, in this vicinity, have yet to learn that the raising of fruit and vegetables is the most profitable employment of the husbandman. A good-sized apple tree of choice fruit will frequently produce more profit than an acre of corn, or rye, or oats, and every tree on any farm that is sound and thrifty, may, by ingrafting, in half-a-dozen years, be made to yield good crops of valuable fruit.

An acre of land, planted with strawberries, will yield the farmer as much profit as ten acres of corn; and strawberries are as easily raised as corn, are as certain a crop, and always find a ready market at favorable prices. An acre of land planted to cranberries will yield more profit even than strawberries, and are always in great demand at a good price. Onions are another crop which are profitable to raise to supply the market. It is as easy to get 500 bushels of onions on an acre of land as to get 200 bushels of potatoes, or 50 bushels of corn. Carrots and beets are also profitable crops for the farmer, and will aid him exceedingly in fattening his cattle and feeding his stock. The lands in the Connecticut valley are of the right sort to raise these roots—deep and rich loam, and free from stones. It should be the established rule of every cultivator to have no indifferent fruit. It requires little or no more care to raise a Baldwin, a Greening, or Russet apple tree, than it does an insignificant seedling,—the fruit of one worth from 50 cents to \$1 a bushel for winter, the other from 8 to 12 cents for vinegar, or to feed stock. Recent experiments go to show, that, by suitable culture, trees that are barren every other year may be made to produce good crops annually; that there is no more necessity of trees being barren half the time, than there is of land lying fallow half the time to recruit: both may be made to produce good annual crops, if suitably enriched.

Mr. Pell, a great apple cultivator on the banks of the Hudson River, in a letter to the Commissioner of Patents, at Washington, says in substance:—"For some years, I have been experimenting

upon apple trees, having an orchard of 20,000 bearing Newtown Pippins. Three years ago, I scraped all the rough bark off from several thousand apple trees, washed the trunks and limbs, as high as I could reach, with soft soap, in the month of April; early in June, I trimmed out the branches that crossed each other, and, with a sharp knife, split open the bark by running it from the ground to the first limbs; this was also done in June. In July, I placed one peck of oyster-shell lime around each tree, and, in November, dug it in thoroughly. The following year, I collected, from these trees, 1,700 barrels of apples, which sold in New York for \$4 a barrel, and in London for \$9 a barrel. After gathering the fruit in October, I manured the same with common stable manure. Strange as it may seem, the next year the same trees literally bent to the ground with the finest fruit I ever saw. The other trees in my orchard, not treated as above, were barren."

Mr. Pell thinks highly of charcoal dust as a manure for fruit trees, flowering shrubs, and plants. He has found that plum trees, treated with lime and charcoal, are made to bear abundantly, which had been barren for a dozen years before. The efficacy of lime, charcoal, ashes, and compost, for apples, pears, and plums, is well established. Salt is beneficial to plums and quinces, and iron is said to be useful for pears.

The fruit, presented this year, especially the apples, was of better quality and greater variety than ever before exhibited here. There were 180 plates of apples, each plate containing not less than 5 specimens. There were a few autumnal, but mostly winter, varieties. Of these,—

Hon. William Clark presented 16 varieties:—Winter Sweet, or Mother apple, Westfield Seek-no-further, Late Golden Sweeting, Ribstone Pippin, Flushing Spitzenberg, Rhode Island Greening, Jewett's Fine Red, Fall Pippin, Baldwin, Fameuse, Roxbury Russet, Lady apple, Newtown Pippin, Red Cheek Russet, Wine apple, and one seedling.

Harvey Judd, of South Hadley, presented 15 varieties:—Roxbury Russet, Rhode Island Greening, Silver Sweeting, Blue Pearmain, Red Cheek Russet, Late Golden Sweeting, Baldwin, Fall Greening, Red Pearmain or *Æsopus* Spitzen-

berg, Fall Pippin, Black Gillifleur, Winter Sweet or Mother apple, Rhode Island Pippin, Alexander or Congress, Belle Bound, Seek-no-further, Nonsuch or Baldwin.

Dr. Woodward presented 12 varieties :—Fall Pippin, Cornish Gillifleur, Baldwin, Blue Pearmain, Phillips Sweeting, Belle Bound, Rhode Island Greening, Late Golden Sweeting, Flushing Spitzenberg, Roxbury Russet, Green Russet, Sweet Lady apple.

Mrs. Joseph Warner presented 11 varieties :—Roxbury Russet, Hubbardston Nonsuch, Seek-no-further, Yellow Newtown Pippin, Flushing Spitzenberg, Mother apple, Green Russet, Red Cheek Russet, Sauce apple, Rhode Island Greening, Late Golden Sweeting.

Mrs. E. Hunt presented 9 varieties :—Rhode Island Greening, *Æsopus* Spitzenberg, Seek-no-further, Golden Russet, White Bellefleur, Baldwin, Flushing Spitzenberg, Black Gillifleur, Belle Bound.

Dexter Allis, of Hatfield, presented 9 varieties :—Roxbury Russet, Westfield Seek-no-further, Baldwin, Rhode Island Greening, Washington Grey or Cornish Gillifleur, Flushing Spitzenberg, Sweet Russet, *Æsopus* Spitzenberg, and Pearmain.

Charles Smith, of Hadley, presented 7 varieties :—Killam Hill, Seek-no-further, Bellefleur, Madison Seek-no-further, Sweet Greening, Yellow Newtown Pippin, Oyster Bay apple.

Charles Starkweather, 6 varieties :—Blue Pearmain, Fall Pippin, Flushing Spitzenberg, Black Gillifleur, First Good.

Joseph Lathrop, 5 varieties :—Flyer, Fameuse, Seek-no-further, Rhode Island Greening, Red Cheek Russet.

J. H. Butler, 4 varieties :—Graham apple, Baldwin, Blue Pearmain, Roxbury Russet.

T. G. Huntington, of Hadley, 6 varieties :—Black Gillifleur, Rhode Island Greening, Westfield Seek-no-further, *Æsopus* Spitzenberg, Baldwin, Flushing Spitzenberg.

Dr. Walker, 4 varieties :—Congress or Alexander, Fall Pippin, Greening, Black Gillifleur.

Dr. Graham, 2 varieties :—Graham apple, Rhode Island Greening, fine.

These apples were very fine specimens of excellent varieties.

The committee were happy to recognize some rare and excellent sorts; of these, some may be new varieties, such as the Graham apple,—a fine fruit of the family of Seek-no-further; the Ribstone Pippin, Hubbardston Nonsuch, Fameuse, *Æsopus* Spitzenberg, Cornish Gillifleur, Phillips Sweeting, Killam's Hill, Westfield Seek-no-further, Alexander or Congress, Pome Water, and others. These are worthy of cultivation, and, being now introduced, can hereafter be obtained for grafting at any time.

The fruit, at this season, can only be of the late autumn and winter varieties. It may not be amiss to say, that, in this section of country, many excellent varieties of apples can be found, such as the Early Harvest, Early Strawberry, Early Bough, Juneating, Summer Pearmain, Early Golden Sweeting, Red Margaret, Benoni, Red Astrachan, Porter, Williams's Early Red, New York Spice. The season for these has now passed. All of these can be obtained for grafting in this neighborhood, as well as some excellent varieties of winter fruit, such as the Swaar, Northern Spy, Kelsey, &c.

The four best summer apples for eating, are the Early Harvest, the Williams's Early Red, the Red Astrachan, and the Summer Pearmain. For baking, the Early Bough and Golden Sweeting.

The four best fall apples for eating, are the Porter, Fall Pippin, Liscom, and New York Spice.

For baking, the Late Golden Sweeting, Phillips Sweeting, Belle Bound, and the Pumpkin Sweeting.

The six best winter apples for eating, are Rhode Island Greening, Baldwin, Roxbury Russet, *Æsopus* Spitzenberg, Yellow Bellefleur, and Newtown Pippin. For baking, Mother apple, Danvers Sweeting, and Hartford Sweeting.

The committee have taken some pains to correct the false names under which fruit has been presented.

The very common error in this vicinity of naming the Fall Pippin, Pome Royal, or Pound Royal, will be corrected after a while, but not immediately, as the name has been long and extensively misapplied, and is still persisted in by some who claim to understand the fruit.

The Fall Pippin is an autumn apple, in perfection in October, and is mostly gone by the first of December. A few specimens may keep longer. The skin is deep yellow, the stem is three-fourths of an inch long, set in rather a shallow cavity.

The true Pome Royal was first raised by General Putnam, in Pomfret, Conn., where the fruit is now common, and much approved as a winter fruit. The skin, at this season, is green, but in winter is pale yellowish white; the stem is $1\frac{1}{2}$ inch long, in a deep cavity, and the fruit is in perfection in December and January.

The apple, marked Washington Grey, the committee think, is the Cornish Gilliflower, one of the choicest winter apples, differing essentially from the black Gillifleur, which is but a second or third-rate apple.

It appears to the committee that the Congress apple is the excellent Russian cooking apple, known by the name of Alexander. The apple, known here as the Red Streak apple, appears to be the Wine apple, a very pleasant and valuable variety.

The Westfield Seek-no-further, an old Connecticut variety, is larger and higher flavored than the common sorts, and more desirable for cultivation.

The Early Harvest is called the Bough by some, and Juneating by others; it is a distinct fruit from either; the Bough being one of the best early sweet, and the harvest the earliest and best sour apple. The Juneating is inferior to the Harvest, not quite so early, but a variety worthy of cultivation, as it is early, and ripens gradually, so as to furnish fruit for four or five weeks.

It is of no little importance to have the apples, which we are cultivating, rightly named; if not, we may grow varieties undesirable, when we suppose that we have those that are choice and valuable. This is particularly important to nurserymen, who should be able to recommend, with entire confidence, all the trees that they put into the market.

PEARS.—There were twelve plates of pears presented, of only a few varieties. At the present time, the attention of the cultivators of fruit is very much turned to the pear, as affording an immense variety of excellent fruit, valuable at all seasons, from

summer to late winter. Within the recollection of many members of the society, it would have been difficult to find a dozen varieties of pears in this vicinity; now, in some parts of the Commonwealth, a single cultivator is able to exhibit two hundred varieties, all valuable, and more or less worthy of cultivation.

The mode of dwarfing, now almost universally adopted in cultivating the best varieties of pears, is worthy of general adoption. It brings the trees into bearing in much less time after planting, greatly improves the fruit, and enables the owner of small premises to cultivate quite a variety of this excellent fruit.

The four best varieties of early pears, are the Bloodgood, Dearborn's Seedling, Bartlett, and the Julienne, in some localities.

The six best common varieties of autumn pears, are the Doyenne, two varieties, the White and the Gray; Beurre Bosc, Beurre Diel, Seckel, Dix, Louise Bonne de Jersey, and many others, nearly or quite equal.

The four best winter pears, are the Beurre d'Arenberg, Knight's Monarch, Prince's St. Germain, and Winter Nelis.

The committee feel, in common with every lover of good fruit, who attended the exhibition, great pleasure in witnessing the increased interest felt and manifested, from year to year, in the cultivation of fruit. The display of apples far surpassed any former exhibition, and yet many fruit-growers in the neighborhood did not even know that there was to be an exhibition of fruits; and others did not present their fruit, because they had no rare varieties, or extraordinary specimens.

In many parts of the Commonwealth, monthly exhibitions of fruit are held a large part of the year; in others, the annual gathering of fruits brings together amateur cultivators from neighboring counties and remote districts, loaded with fruits, to swell the catalogue of the reports. Here, we have no foreign aid; a few towns furnish all the specimens presented. We cannot, therefore, give so long a list of names of contributors, or such an array of specimens, as can be found in other places. We, however, have just reason to be proud of our own fruits,

and of the spirit that is awakened in this good old county, on the subject of fruit in general.

ESCULENT ROOTS AND GARDEN VEGETABLES.—Some fine specimens of winter squashes were presented by the Rev. Dr. Allen, and by Ansel Wright, and a very large one by Michael Williams. These were the Valparaiso, the Paris, and large Crookneck. These large specimens of squashes excite surprise and wonder, but they are far less valuable than the Butter, or the Marrow, the Acorn, the genuine Valparaiso, and the Canada Crookneck. The winter squash is one of our finest vegetables, and the varieties are numerous. In small gardens, it is difficult to keep them distinct for any great length of time. The better sorts only are worth cultivating for the table.

Handsome specimens of sweet potato were raised and presented by H. K. Starkweather. T. G. Huntington, of Hadley, exhibited two handsome specimens of the seed wheat, and good-looking potatoes raised from the seed—the only way to obtain new varieties. Such efforts are worthy of encouragement. Messrs. James and George Dickinson, of Hadley, presented a basket of large and fine-looking potatoes, the seed of which was brought by them from London. They are there called the Yorkshire Flats. They are very handsome, said to yield well, and are hardy. When cooked, they are good flavored and mealy. The writer has eaten of them, and can bear testimony to their excellence. They are said to be best for spring use, but are good at all seasons. Messrs. Dickinson raised, this year, thirty-one bushels on 20 rods of ground, part of which was shaded by a barn. The advantage of this potato is its productiveness, large size, entire freedom from rot, and excellence for the table. The committee recommend to the farmers the cultivation of this new kind, understanding that the Messrs. Dickinson will reserve, and be willing to dispose of, their entire stock for seed.

It is to be regretted that so few varieties of potatoes are presented for exhibition. The cultivation of the better sorts is a matter of deep interest to the whole community. The potato is the most valuable esculent, cultivated as the food of man. Al-

though it has been the subject of disease, which has greatly diminished the quantity produced, yet there has been no deficiency as an article of food in this country. It is a subject of interesting inquiry, what varieties of the potato resist this disease most certainly, and what are most subject to it. The disease was never extensively known till the *Carters* were introduced. These are a delicate sort, and, like delicate sorts of all fruits, vegetables, and even animals, most liable to disease and death. The *Carters*, *Mercers*, or *Chenangoes*, have suffered more from rot than the more hardy varieties. The vines are more delicate, and, to the insect that has been supposed to be the cause of the evil, may afford more delicate food than the vines of the more hardy kinds. When we cultivated the Red potato, the Rusticoats, the English Whites, the Scotch Greys, the Blue, the Orange, and the Irish Whites, this formidable disease was unknown. Many of these varieties were fine when first introduced, but they all degenerate, and, as they become less delicate, they become more hardy. Such will probably be the case with the *Chenangoes* and the *Carters*.

At present, the Peach Blow is one of the best varieties of the more hardy sorts. It ranks below the *Carter* for delicacy, and above it for productiveness and hardiness; it is certainly one of the best potatoes, and worthy of extensive cultivation.

Such being the tendency to degenerate with the potato, every farmer should avail himself of new varieties which promise well. The very beautiful specimens presented by T. G. Huntington, of Hadley, raised from the seed, it is to be hoped will continue to be raised till their true character is ascertained. If they prove good varieties, as doubtless many of them will, the cultivator will deserve the thanks of the farmers, and the gratitude of the community.

One of the excellencies of the Yorkshire Flats, presented by Mr. Dickinson is, that, when planted in the midst of those which have suffered greatly from rot, it has entirely escaped.

The cause of this destructive "rot" is a mystery that may never be developed, but it should prove no obstacle to cultivation. The true way is to continue to cultivate, and trust a wise and beneficent Providence for the result. The evil will

finally pass away, and crops will again crown the labors of the husbandman with abundance. The potato is a necessary of life, in all countries where it can be cultivated and kept. In this, as in other valuable crops, there will occasionally be a failure. The wheat has its fly, its rust, and its winter-kill, to disappoint the farmer. The Indian corn is liable to be destroyed by the early and the late frosts, to be devoured at the beginning and the end of its growth by the crow and the blackbird. The apple, the peach, the pear, and the plum, have each their enemies, which occasionally diminish or destroy the fruit. These should not discourage the cultivator, but he should persevere and continue to plant and to sow.

We have abundant cause of gratitude to the Author of all good, that the products of the earth designed for the food of man, are so numerous, so perfect, so plenteous, that, if one fails, be it ever so important, an endless variety is still in reserve for our sustenance and enjoyment.

S. B. WOODWARD, *Chairman.*

POULTRY.

Lyman Church's Statement.

The average number of hens kept by me, the last year, I estimate at one hundred and forty; mostly of a cross between the Dorking and the common hen. The oft-repeated and puzzling inquiry, as to whether fowls may be profitably kept upon a farm, is satisfactorily settled in my mind; and, for the satisfaction of others, I submit the actual cost of keeping them, with a fair estimate of the value of the stock on hand at the commencement and close of the season, together with the quantity of eggs produced, &c. :—

Value of stock, Nov. 1, 1847,	.	.	.	\$40 35
Expense of feed,	.	.	.	116 45
				————— \$156 80

50 HAMPSHIRE, FRANKLIN AND HAMPDEN, &c.

Value of stock, Oct. 1848,	.	.	\$65 30
" " poultry sold,	.	.	20 68
" " manure, 63 bushels, 15 cts.,	.	.	9 45
" " eggs, 1256 doz. at 13½ cts.,	.	.	169 56
			<hr/> \$264 99

This leaves to the credit of the hens the sum of \$108 19; and this result I arrive at by actual and careful experiments, without guessing or conjecture. It is one, too, attainable by any prudent person, who will bestow an equal amount of care, proportioned to their value, as is, or ought to be, bestowed upon any kind of stock, in order to have them do well. And I would inquire, in what other way, upon so small an investment, can so fair a profit be produced upon the farm?

In regard to treatment of them, I give them a warm house, with a comfortable yard or range; and 150 hens should have from one-half to three-quarters of an acre. My house is so arranged, as to keep them, when I choose, in separate apartments, and *constantly* supplied with food, old plastering, lime, gravel, water, &c., with some *secret* nests, as well as open boxes, for them to lay in. The house should be kept well white-washed, and as clean as possible. The kind of food I use is varied occasionally;—corn, boiled potatoes, burnt barley, oats, and wheat screenings; the latter, especially, I find very valuable. The quality of the food, however, does not, in my opinion, influence the laying so much as is imagined. They must have *enough* to eat, and be made comfortable in other respects. With my management, they lay the year round.

With regard to the *kind* or *breed*, I am entirely of opinion, that the cross between the Dorking and common hen is a very valuable kind. This year, as will be perceived, I have had 1256 dozen eggs, while, last year, I had only 150 dozen; and I attribute the gain to the improvement in the stock in that way. My own opinion is, that too little attention is paid to this species of domestic animals, and that, for the *proper* attention, while every one keeps poultry, very few reap all the advantage they might.

MIDDLEFIELD, Oct. 5th, 1848.

WORCESTER COUNTY AGRICULTURAL SOCIETY.

THE proposals for premiums offered by this society for the cattle-show and exhibition held at Worcester, the 27th of September last, varied from those of former years by the omission of all manufactures except those of the dairy. Early in the spring, a communication was received from a committee of the Worcester County Mechanics Association, stating that their society proposed to have an exhibition of manufactures on the day which should be appointed for the cattle-show by the Agricultural Society, and requesting that the whole of the manufactures might be relinquished to them. The trustees, believing that the objects of both societies could better be attained by concentrating rather than dividing the exhibition of manufactured articles, offered no premiums for any manufacture except for butter and cheese. The exhibition by the Mechanics Association was not confined to the products of either this county or state. It was, altogether, a very fine show, doing great credit to the artisans of the country, and highly satisfactory to those who exerted themselves in getting up the exhibition.

The Worcester County Horticultural Society also had their exhibition on the same day, and they were eminently successful in making it creditable to themselves and interesting to the public.

The united attractions, offered by the exhibitions of these three societies, induced a large attendance of spectators, greater by thousands than had ever been witnessed here on any similar occasion.

The show of cattle, both as regards number and quality, was of a higher character than at any former exhibition,—more particularly in respect to fat cattle and young stock. It will be

difficult, in future years, to collect so many fat cattle of so good a quality as were those exhibited the last autumn.

Where reports are confined to a statement of the comparative value of different animals, as are most of those in relation to our last cattle-show, it is difficult to distinguish any passages, "as worthy of public notice, study, and application."

The address was delivered by the Hon. A. H. Bullock, of Worcester.

— PLOWING MATCH.

The number of entries of single ox-teams, the only teams for ploughing for which the society offer premiums, was 16. The committee, AUGUSTUS G. HILL, *Chairman*, awarded to—

Simon Carpenter, of Charlton, himself ploughman, Martin's eagle plough, No. 3, 1st premium,	\$10 00
Lorin Carpenter, of Charlton, do. do., Ruggles, Nourse & Mason's eagle plough, No. 20, 2d do.,	9 00
Joseph H. Whitney, of Westborough, do. do., R., N. & M.'s sward plough, 3d do.,	8 00
Horace Stockwell, of Sutton, do. do., Martin's eagle plough, No. 3, 4th do.,	7 00
Joseph A. Reed, of Princeton, his son, ploughman, Martin's No. 3 plough, 5th do.,	6 00
Anson Warren, of Westborough, himself plough- man, R., N. & M.'s sward C. plough, 6th do.,	5 00
Harvey Putnam, of Sutton, do. do., Martin's eagle, No. 3, plough, 7th do.,	4 00
William Eaton, Jr., of Worcester, do. do., R., N. & M.'s sward, 8th do.,	3 00
Thomas J. Wheelock, of Grafton, do. do., R., N. & M.'s C., 9th do.,	2 00
David Carpenter, of Charlton, do. do., R., N. & M.'s eagle, 10th do.,	1 00

FAT CATTLE.

The committee on fat cattle are fully sensible of the fact, that theirs is a weighty matter; and, to true descendants of the beef-eating old Saxons, one of transcendent importance. What though the eloquent Patrick Henry ridiculed the man who thought only of his best *beef*, while the people were rejoicing at the birth of a nation, we doubt not, if the Virginian had lived in this our day, and attended this our jubilee, even he would have shouted with the loudest, *beef! beef!* and thought it no abstraction.

As beef is the complexion to which all cattle must come at last, and, as this festival is preëminently a "cattle-show," the committee feel that, to their inspection and adjudication has been assigned the great feature, the crowning excellence of our annual exhibition. But, though aware of the importance of the subject, and however disposed to magnify their office, the committee acknowledge they had no adequate conception of *its magnitude*, until they saw the moving mountains of future sirloins and steaks, tender-loins and roasts, which have this day graced the society's enclosures.

Great as have been the improvement and advance in all the departments of agriculture and stock-raising, since the establishment of this society, in none has that improvement been so great as in that of fat cattle. By the records of the society, it will appear that, at the first cattle-show, the heaviest and best ox offered for premium, weighed 1,732 pounds. To-day an ox is shown to the committee, weighing 2,780 pounds, and the average weight of 15 others offered for premium is 2,240.

Here is a fact at once encouraging and complimentary, flattering to the society under whose auspices the improvement has been made, and most honorable to the thrift and enterprise of our intelligent and progressive yeomen. But though much has been done, your committee believe much more may be done. The limit which bounds the area of fatness has not yet been reached; the great problem, of how much beef one single oxhide may be made to contain, has not yet been solved.

Seventeen fat oxen, 5 steers, and 2 cows, have been offered this year for premium; and 6 fat oxen, 2 steers, and 1 cow for exhibition,—all good, excellent, and all worthy of high commendation and liberal premiums. After careful investigation, taking into consideration the age, the feed, the cost, and other matters, the committee finally awarded to Nathaniel Dodge, of Sutton, the first premium of \$12, for his near ox. His mate was offered for exhibition, having, at the last annual cattle-show, received the highest premium. These oxen were raised in Sutton, are of the native breed, 5 years old, and weighed 5,110 pounds, there being but two pounds difference in their weight. For the first four years, they were kept on hay and grass, with occasionally a few roots in the winter season; and, since that time, they have had a small quantity of meal daily. For symmetry and beauty they are unsurpassed, and, in the opinion of your committee, are as near perfection as is possible. Mr. Dodge informed the committee that, for several weeks past, and, during the most of the fall of 1847, he took them into most of the New England states and New York, for exhibition. The fatigue of journeying must necessarily retard their growth, and make them some hundreds of pounds lighter than they would have been, had they remained on the old homestead, which produces, in abundance, the luxuries of life so necessary to the making of good cattle.

To Milton S. Morse, of Winchendon, the second premium of \$10, for his black ox, weighing 2,767 pounds.

To Asa Matthews, of Worcester, third premium of \$8 for his off ox.

To Milton S. Morse, of Winchendon, fourth premium of \$5, for his light red ox weighing 2,767 pounds.

All these last mentioned are excellent cattle, and your committee are almost constrained, in expressing their opinion, to form the comparative from the superlative, and pronounce them a little better than the best.

The committee awarded the first premium of \$10, to Asa Rice, of Worcester, for his yellow steer, 3 years old, and weighing 1750 lbs.; second premium of \$6, to Milton S. Morse, of Winchendon, for his white steer, 4 years old, and weighing

1715 lbs.; third premium of \$4, to Peter C. Stockwell, of Sutton, for his near steer, 3 years old.

Harvey Dodge, of Sutton, offered for exhibition merely, a steer 4 years old, of Durham breed, weighing 2000 lbs., grass-fed entirely. Mr. Dodge bought him when 2 years old, and, discovering in him, a foundation for future greatness, has kept him, with the intention of offering him for premium hereafter. The committee were pleased with the animal, and trust that his owner will realize a liberal reward for his enterprise.

OTIS ADAMS, *Chairman.*

WORKING OXEN.

The committee, WARREN LAZELL, *Chairman*, reported, that there were 20 yokes of oxen entered for premium, and 2 for exhibition only, either yoke of which any farmer might well be proud to own. They awarded the first premium of \$10, to Simon Carpenter, of Charlton, for his oxen, 5 years old. He exhibited a team of 5 yokes of cattle, the oldest of which was 5 years old, the next, 4, and so down, the youngest being yearlings. The committee pronounced this as good a team as they ever saw together, and recommended a gratuity to Mr. Carpenter, of \$2, for this team.

Six other premiums were also awarded. The committee were unanimous in the opinion, that there were other oxen besides the successful competitors, whose work would have entitled them to a preference over some who received a premium, had that work been accomplished with less whipping.

MILCH COWS.

The committee found, in the pens, 26 cows, 10 of which were entered for premium, and 16 for exhibition. Those for exhibition, were entered by—

Ebenezer Flagg, of Worcester,	1 native.
John W. Lincoln, of " "	1 Ayrshire.
William Eames, " "	1 native, and 2 Devonshire.
John Brooks, of Princeton, .	2 half Ayrshire.
Harvey Dodge, of Sutton, .	1 Durham.
Asa Rice, of Boylston, .	1 Devonshire.
John F. Clark, of Worcester,	1 native.
From the State Reform School, Westborough, 6 half Durham.	

In awarding the premiums, the unanimity of the committee precluded the necessity of a reference to the chairman, and they awarded to—

Joseph A. Reed, of Princeton, first premium,	. \$12 00
S. H. Flagg, 2d, of Worcester, second " .	. 10 00
Samuel B. Watson, of " third " .	. 8 00
Simon Carpenter, of Charlton, fourth " .	. 5 00

The cows offered for exhibition were well worthy of the place they occupied, and, could they have answered the inquiries made, would have said, "give me good and sufficient food, and I will give you 60, 50, 45, 40, and 35 lbs. of milk per day." Those offered for premium have spoken through their owners, as is recorded in their statements, and must be judged by that testimony. It is presumed that the statements furnish *correct weights and measures*, agreeable to the standards used. By another year, each town will be furnished, by an act of the Legislature, with standard weights and measures, which will, probably, assist, in a degree, future committees in the discharge of their arduous and delicate duties. A careful examination of some of the statements will show, that there was not a *daily* use of weights and measures; and of others, that care and attention were bestowed, indicating a particularity worthy of imitation.

It may be, that too many of the cows offered for premium, are animals of "accident," rather than the result of care and attention to breeding. As the object of the society is to stimulate farmers to improve their stock, it may be worthy of inquiry, whether some alterations in the requirements for premiums,

should not be made. A suitable premium offered for the *two* best cows of a stock of *six*, *raised* by the applicant, or in the town, the whole number to be *kept in the same manner*, regard being had to yield and keeping of the whole, and blanks to be furnished, that the statements be uniform, might have the tendency to increase the number of good cows, resulting in a benefit to the individual and to the public. Some change in the rules, and a rigid observance of them, would furnish information desirable, but not now obtained.

There is no animal more useful, or that better repays labor and care, than the cow. A proper attention to *breeding*, *feeding*, and *milking*, will insure a productive and profitable animal. It is supposed, that three acres of land, valued, say at seventy-five dollars per acre, will furnish fodder sufficient for one cow for one year. It has been said, by a distinguished member of the society, that heifers, reared by himself, cost a little less than twenty-two dollars, at the age of 3 years. This sum, added to two hundred and twenty-five dollars,—the value of three acres of land,—gives the sum of two hundred and forty-seven dollars, the required capital for the purchase and support of one cow. If yielding 8 quarts of milk per day, on the average, for nine months of the year, she will produce, in butter, at *sixteen* cents per pound, say thirty-five dollars annually; or, in milk, at eight and one half cents per gallon, the sum of forty-six dollars and twenty-eight cents. Taking the medium of these sums, the amount received would be forty dollars and seventy-eight cents, and the account, for *five* years, would be something like the following:—

<i>Dr.</i>		
Purchase of cow,		\$22 00
" " land,		225 00
Insurance of cow, $2\frac{1}{2}$ per cent.,		2 75
Taxes on land and cow,		9 25
Salt, labor, &c.,		45 00
Balance interest account,		61 00
Profit over labor, interest, and charges,		104 00
		<hr/>
		\$469 00

	Cr.	
Sale of butter and milk,		\$203 90
" " or value of calves,		4 00
" " cow for <i>beef</i> ,		36 10
" " land,		225 00
		<hr/>
		\$469 00

Thus it will be seen, that the proprietor of the cow and land obtains about eight and one third per cent. *clear profit*, or say *fourteen* per cent. for the use of the money invested, a dividend equal, in amount, to that derived from *stocks less fanciful*, but too frequently *fancied* by the farmer, to his injury.

The difficulty former committees have experienced in obtaining information respecting entire dairies, induced the chairman to address several farmers, who, in years past, have entered cows for premium, for facts relating to their own dairies, and those of their neighbors. In reply, A. B. says, "I feel very much mortified, that I cannot furnish you with the particulars in regard to my cows. This is a subject of vast importance to the farmers of the county. We are keeping cows from year to year, not knowing the *annual* products from one cow, and, in a majority of cases, are not able to tell if there is any difference at all in our stock. These things ought not so to be. The endeavors to get the *whys* and *wherefores* of good cows, so far as the cattle-show has been concerned, are all frustrated; they are all animals of *accident*, so that we have no credit, as we do not breed them. We can make it profitable to breed; it would be the very best business done on the farm." C. D. says, "I have milked 35 cows during the months of June, July, August, and September, and have sold the milk; whole amount, 32,648 quarts, being an average of each cow's milk, per day, of about $7\frac{3}{4}$ quarts."

If the above-named cows had given, on the average for the four best months of the year, 12 quarts per day, the owner would have added to his income about \$300, or a sum sufficient to purchase ten cows;—a striking illustration of the need of improvement.

The exhibition of this day gives evidence, that some have taken advantage of the imported stock, and that others have made judicious selections from our native cattle; but no evidence has been furnished that the farmers of the county are awake to the importance of such an improvement as will render it as difficult to find *ordinary*, as it now is *superior*, cows.

GEORGE. DENNY, *Chairman*.

Joseph A. Reed's Statement.

My cow, of the Devonshire breed, is five years old—calved the 26th day of April—calf raised—kept with a stock of six cows, in summer pasture, without any other feed—was lame with the *foul* in one hind foot, which caused a falling off in milk.

June 10th to 20th, 391½ lbs. milk.

From which, was made 20½ lbs. butter.

One quart of milk weighed 2½ lbs.

September 10th to 20th, 279 lbs. milk.

From which, was made 15½ lbs. butter.

One quart of milk weighed 2 15-16 lbs.

Samuel H. Flagg's Statement.

My cow went dry 8 weeks—calved May 15th; calf small, and raised; will calve in March next; kept with three other cows; distance to pasture one and a half miles, making three miles of travel per day, with no extra feed. From Sept. 10th, very little feed in pasture, and no water, except when let out at noon and night; hay at night, with two quarts wheat meal. From June 10th to 20th, milk measured five times, averaging 16 quarts per day; weight from 45 to 46 lbs.; amount of butter in ten days, 22½ lbs.

Sept. 10th to 20th, 11 quarts per day, weight 32 lbs.; making 110 quarts; weighing 320 lbs., and making $14\frac{3}{4}$ lbs. butter.

Samuel B. Watson's Statement.

Cow came in, March 21st, 1848; kept with one other cow in a poor pasture; has had 3 quarts meal per day in June; in September, corn-stalks. April 22d to Sept. 23d, made 195 lbs. butter; in the month of June, made 55 lbs. In that month, she gave 12 to 13 quarts milk per day; milk not measured in Sept.

June 10th to 20th, made 22 lbs butter.

Sept. 10th to 20th " 15 " "

One quart milk weighed $2\frac{3}{4}$ lbs.

Simon Carpenter's Statement.

My cow is one half Holderness and one half native; four years old; raised by myself; kept with six cows: calved in April last; calf slaughtered when four weeks and one day old; veal weighed 106 lbs.

June 10th to 20th, 370 lbs. milk.

From which, was made $16\frac{1}{2}$ lbs. butter.

Sept. 10th to 20th, 325 lbs. milk.

From which, was made $14\frac{3}{4}$ lbs. butter.

Marshall J. Maynard's Statement.

Cow four years old; milked until three weeks of calving; calved 13th of May; calf raised: kept with seven other cows, and has had no grain or other nutritious substance except grass;

greatest quantity of milk any one day $17\frac{1}{2}$ quarts; greatest weight at one *milking*, $24\frac{1}{2}$ lbs.

June 10th to 20th, 16 15-16 lbs butter.

Sept. 10th to 20th, $12\frac{1}{2}$ " "

Harvey Dodge's Statement.

The half Durham cow offered by me for premium is 11 years old; calved the last of January; gave, from May 1 to Sept. 1, on an average, 37 lbs. milk per day, on grass; the milk has been sold.

John W. Lincoln's Statement.

My cow is principally of Yankee breed: seven years old; kept with nine other cows; no extra keeping, except for the last month; hay was given her in the morning; had her calf the first of April last.

June 10th to 20th, 362 lbs. milk.

From which, was made 14 lbs. butter.

Sept. 10th to 20th, 273 lbs. milk.

From which, was made $11\frac{1}{2}$ lbs. butter.

H. R. Keith's Statement.

Cow raised by me; part Holderness and part native; four years old; had her first calf when two years old, and has had two since, the last in March; kept with five other cows, without extra feed; calves early next spring.

June 10th to 20th, inclusive, 370 lbs. milk,

From which, was made 20 lbs. butter.

Sept. 10th to 20th, 268 lbs. milk.

From which was made 10 lbs. butter.

John Brooks' Statement.

Cow eight years old ; weight 1100 lbs. ; calved 13th of March, a heifer calf of good quality ; kept with five other cows, on grass only.

June 10th to 20th, $361\frac{1}{2}$ lbs. milk.

From which, was made $11\frac{1}{2}$ lbs. butter.

Sept. 10th to 20th, $332\frac{1}{2}$ lbs. milk.

From which was made $12\frac{1}{4}$ lbs. butter.

The whole weight of milk, during the twenty days, was 694 lbs. ; the cream taken from this milk weighed $55\frac{2}{3}$ lbs., equal to 8 per cent. of the milk ; whole weight of butter made from the cream $23\frac{1}{4}$ lbs., equal to $42\frac{2}{3}$ part of the cream, or $3\frac{4}{15}$ part of the milk, or, in twenty days, the cow made $2\frac{1}{15}$ part of her weight in butter.

William S. Lincoln's Statement.

Cow, native breed, 8 years old, calved early in May last, to calve early in March next ; calf remarkably large, being a bull, was killed ; kept in a pasture all summer with five other cows, being without subdividing fences, and deprived of the advantages to be derived from feeding my mowing land for fall feed. From the time of cutting corn-stalks, fed once a day a limited supply of this fodder, which was all the fodder, except what was derived from a very dry pasture.

June 10th to 20th, exclusive, 432 lbs milk.

Which, when strained, measured 179 quarts.

Sept. 10th to 20th, 282 lbs. milk.

Which, when strained, measured 122 quarts.

In June, from the cream of the first five days' milking was churned $9\frac{3}{4}$ lbs. butter. From the next five days, $8\frac{1}{2}$ lbs butter ;

making, in all, $18\frac{1}{2}$ lbs.; the last five days were exceedingly warm and close; the first five days' churning in Sept. produced $7\frac{1}{2}$ lbs. of butter, and the second five days $7\frac{1}{2}$ lbs., making, in all, $15\frac{1}{2}$ lbs. Greatest yield per day,—

In June, $18\frac{1}{2}$ quarts— $46\frac{1}{2}$ lbs.

In September, $13\frac{1}{2}$ quarts— $31\frac{1}{2}$ lbs.

BULLS UNDER ONE YEAR OLD.

Nine different animals were offered for examination. The committee unanimously recommend to the officers of this society, that no premiums hereafter be offered for any cattle under twelve months old. They believe it would be much better to give larger premiums for older animals. The reason which the committee present for this alteration in the practice of the society, is, that, prior to the age of one year, no animal is so fully and perfectly developed, in its form and figure, as to enable one to judge, satisfactorily, as to its real merits, and the qualities it will possess at maturity.

AMASA WALKER, *Chairman.*

HEIFERS.

The number of heifers of two years old, and upwards, offered for premium, was twenty-seven, and three for exhibition. The number of yearling heifers entered for premium was twenty-one, and of heifer calves seventeen.

STEERS.

There were entered for premium, thirteen pairs three years old steers; ten pairs two years old; and seven pairs yearlings.

Of which, sixteen pairs were of native breed.

"	five	"	"	of Durham.
"	three	"	"	of Creampot.
"	two	"	"	of Devonshire.
"	one	"	"	of $\frac{1}{2}$ Holderness.
"	one	"	"	of $\frac{1}{2}$ Devon. and $\frac{1}{2}$ Durham.
"	one	"	"	of $\frac{1}{2}$ Ayshire and $\frac{1}{2}$ Durham.

POULTRY.

But one lot of turkeys were exhibited, and those, six in number, were offered by Caleb Nourse, of Bolton; native breed, four months and one week old. They have been raised entirely on their own pickings. They are of the dark breed, which, in the opinion of the committee, is preferable to others. They award to Mr. Nourse the first premium of \$3.

Only one lot of ducks was presented, and those, 52 in number, were raised by John Hersey, of Worcester; native breed, three and four months old. They are a part of a flock of 111, from three mothers. A portion were hatched under hens. The owner, who is a minor, stated that a prominent article of their food has been fresh fish, caught by himself in the brooks and ponds. His experiment in raising ducks, generally considered unprofitable, has been unusually successful. They are entitled to the premium of \$3.

John Farwell, of Worcester, offered seven pullets and two cocks, of the Dorking and Kentucky breeds; appearance very fine.

To those raising poultry for the market, the committee would recommend the Dorking breed, which may advantageously be crossed with other breeds.

Ebenezer Lincoln, of Grafton, exhibited six hens, from a flock of thirty-six, mixed breed, one year old. From Mr. Lincoln's statement, it appears, that, since the first of March last, his 36 hens have laid 224 $\frac{1}{2}$ dozen eggs, and hatched 171 chickens; and, after supplying his family, he has sold the remainder of the eggs for \$34 41, and a part of the chickens for \$13 48,

making his cash receipts, \$49 89; besides the chickens on hand, for which he will find a ready market.

The committee improve this opportunity to express their approbation of the plan adopted by Mr. Lincoln, in keeping minutes of the yield of his poultry; and recommend his example as worthy of imitation, by all who may hereafter offer poultry for exhibition.

HENRY S. WASHBURN, *Chairman.*

Ebenezer Lincoln's Statement.

My flock of thirty-six hens commenced laying March 1st, 1848. They laid

In March,	27	dozen of eggs, part of which I sold for	\$3 79
" April,	45	" " " " " "	6 30
" May,	37½	" " " " " "	5 25
" June,	35	" " " " " "	5 25
" July,	32	" " " " " "	6 00
" Aug.,	25	" " " " " "	4 00
" Sept.,	23	" " " " " "	3 82
<hr/>			
224½			\$34 41

No account was made of eggs used in the family, and, during this time, 19 hens sat upon 18½ dozen of eggs, and hatched 171 chickens, part of which I sold for \$13 48, and have the remainder on hand.

CHEESE.

The committee carefully examined ten lots of new, and four lots of old cheese, offered for premium; each containing more than 100 lbs., and accompanied by a certificate conformably to the rules of the society. As a whole, with the exception of only

two or three single portions of distinct lots, they are of good quality; most of them would be deserving of premiums, but for a common defect, which the committee think was easily discoverable—they have not that richness, which cheese made of pure new milk always possesses, if the milk be good. The committee think that this defect may have resulted from a practice, among our economical dairy women, said to have existed so long as to be considered a prescriptive right, of taking, each morning, from the night's milk, so called, cream enough for the family breakfast, and yet considering it no misnomer to call their cheese, *new milch cheese*. Now, if the dairy was large, and the family small, and the milk rich, a trifling abstraction of cream, though not perfectly just, would seldom be perceptible. But, in the reverse of these circumstances, it is very obvious, at least to all lovers of good cheese, that the difference, thus made, might be reasonable cause for serious complaint. Without intending the slightest reflection upon any one, the committee deem it not improper to express the hope, that the suggestion may not be disregarded by those who prepare this article for premium, or for the market, but that they will make it, in the truest sense of the term, what they call it, *new milch cheese*.

The committee have awarded all the premiums, at their disposals, to the following competitors:—

New Cheese.

Job Ranger, of New Braintree,	Lot No. 10,	1st premium,	\$8
Azel L. Clark,	•“	Lot No. 9, 2d	“ 6
Jacob Wilson, of Spencer,	Lot No. 5,	3d	“ 5
Jason Wilson, of Rutland,	Lot No. 4,	4th	“ 4
Danforth K. Tufts, of New Braintree,	Lot No. 1,	5th	“ 2

Old Cheese.

Lorenzo Converse, of New Braintree,	Lot No. 1,	1st premium,	\$6
John Hunter,	“	Lot No. 3, 2d	“ 4

SAMUEL M. BURNSIDE, *Chairman.*

CARROT CROP.

The committee, having been notified that Harvey Dodge, of Sutton, and William S. Lincoln, of Worcester, had made entries for the Society's premiums, soon after visited the lands of those gentlemen, that they might form some opinion of the crop from the appearance of the respective fields. They first viewed the land of Mr. Dodge. The carrot tops gave evidence of a very vigorous growth, which well covered the ground, which was free from weeds, and gave evidence of good cultivation. There was an apparent difference in the two parts of the field, and his statement of his crop gives 266 bushels to one fourth of an acre, and 195 $\frac{5}{16}$ bushels to the other quarter of an acre. In relation to the young orchard, mentioned in Mr. Dodge's statement, the committee viewed the trees with much pleasure; their appearance was that of a choice collection of trees, which had been carefully taken from the nursery, and well set out, and the growth on them, for the past season, had been great. How far the carrot crop had been affected by these trees, is not known to the committee; it was, undoubtedly, in some degree, lessened thereby.

The committee availed themselves of the opportunity of looking over Mr. Dodge's farm, on which they found he was making much improvement. His land is naturally quite moist, with a clayey, compact sub-soil. During the past season, he has been engaged in making deep ditches, and filling the bottom of them with stones; thereby making a double improvement, in disposing of the surface stone, an obstruction to cultivation, of which he has many, and of underdraining his land. From some of these drains, a stream of water was running, which was occasionally used in irrigating the land on the side-hill below, to very great advantage.

In the course of the last autumn, Mr. Dodge had dug a cellar under a part of his barn, where a barn had stood for more than seventy years. At a depth of over five feet from the surface of the ground, nitre could be readily discovered upon the side of the remaining earth, furnishing conclusive evidence that ma-

nures are not wholly lost by evaporation, but that they sink in the earth—and also giving evidence of the great benefits which may be derived from deep and sub-soil ploughing. The committee were shown, where earth taken from under the barn, at a lower point than is mentioned, had been spread on grass-land, and the improvement in the appearance of the growing grass was great. Mr. Dodge informed the committee that he had come to the determination, which he was then carrying into effect, of appropriating his net income, beyond the support of his family, to the improvement of his farm; and no doubt can be entertained that this is a wise conclusion on his part. He is taking a high stand among the best farmers of the county.

The land of Mr. Lincoln is less favorable for the growth of carrots, than that of Mr. Dodge. The soil is not deep; resting on a gravel sub-soil, its condition, although greatly improved from its former state, is not sufficiently rich to produce the largest root crops, and the growth of the carrots had been, apparently, somewhat checked by the drought.

Near this carrot field, was a number of large size bearing apple trees, which had been successfully removed within the preceding year. These trees had been planted on land which is now wanted for the increased growth of the city, and it was necessary either to cut them down, or remove them. As the fruit they bore was of good quality, it was thought desirable to save them, and, although their removal was attended with some trouble, and required much care, it is believed that their future products will repay for the labor, with a large interest, annually compounded.

The proposals offered by the Society are, "for the greatest quantity of carrots on one quarter of an acre, \$8." "For the next greatest quantity on one quarter of an acre, \$5." The award must be in conformity with the facts, that Harvey Dodge is entitled to both premiums for the carrot crop. The committee recommend that \$5 be awarded Mr. Lincoln, as a gratuity.

The committee, having been informed that William A. Wheeler, of Worcester, had a good crop of carrots from his land, and it being an instance of the successful cultivation of this crop for a succession of years, upon the same land, requested of him a

statement thereof, which is hereto annexed. It affords evidence that carrots, like onions, may be advantageously continued on the same land, year after year. The land on which these successful crops have been grown, before being taken up for a carrot crop, was, and had been for many years, a pasture, of which brush and switch-grass had taken sole possession—the soil a thin, gravelly loam, resting on gravel. It may be proper to state, that the bushels mentioned in this account, are bushels by measure, and not by weight.

JOHN W. LINCOLN, *Chairman.*

Harvey Dodge's Statement.

The land on which my carrots were raised, the present season, contains, by measurement, half an acre and seven rods, and is the same land on which I raised carrots and ruta bagas, last year. The condition of the land, in 1847, was good; 16 loads of good stable manure were put on the half acre. The product was 224 bushels carrots, and 110 of ruta bagas.

The above described is the land on which my carrots have been grown, the present season, and which I have entered for the Society's premium, for two lots of one quarter acre each.

Carrot Field—Dr.

1848.

May 1,	To 25 loads, of 25 bushels each, manure, \$1	
	per load,	\$25 00
	Carting and spreading same,	3 00
	To ploughing same, 2 yoke oxen,	1 00
May 28,	" " second time,	1 00
June 1,	1 lb. seed,	0 75
	Sowing same, with machine,	0 50
" 8,	Hoeing before the carrots were up,	1 00
July 25,	Labor, hoeing and weeding, worth	4 00
Aug. 20,	Hoeing and weeding, to this date,	4 00

Nov. 4, Harvesting and carting, . . .	\$12 00
Interest on land, \$200 per acre, . . .	6 00
	<hr/>
	\$58 25

Carrot Field—Cr.

1848.

Nov. 4, By one third manure back, for other crops,	\$8 33
“ 266 bushels carrots, of 56 lbs., from first	
quarter, at 28 cents, . . .	74 48
From second quarter acre, 10,940 lbs., sold	
in the field, at $\frac{1}{2}$ cent per lb., . . .	54 70
	<hr/>
	\$137 51

I believe it to be substantially true, that my crop, on the two lots of one fourth acre each, (half acre,) was 12 tons, 918 lbs., or, 25 tons, 838 lbs. to the acre. This, at \$10 per ton, would amount to \$254 19, at the field. I have been very particular in my accounts for this crop, as some of my particular friends have thought such a crop could not be raised, or, if raised, was not worth so much to feed out to a common stock. For my own part, I should hardly know how to get my stock through the winter, without some kind of roots.

I manured my land one third higher this year, than in former years, and my crop is in proportion. The labor has all been reckoned by the day, and not by the month, and is much higher than it cost. The hoeing and weeding was all done in the middle of the day, or when the sun was hot, and, consequently, was reckoned by the hour. And I feel confident that my statements have not been overrated in regard to weight and measure, nor in labor and other expenses.

Sutton, November 18, 1848.

William S. Lincoln's Statement.

The land, on which my crop of carrots grew, in the spring of 1847, would have been in good condition, had it been sufficiently

manured. It had lain fallow the year previous, and, in the spring of 1847, such compost as I had to spare, with three loads of night soil, was spread and ploughed under. The product upon the piece of land planted (about one third of an acre) of carrots was 175 bushels, by measure.

In the spring of the present year, the land was ploughed, by horse, the depth of the plough beam; the manure, compost from stable manure, loam, and leached ashes, spread upon the land, ploughed under as deep as the horse-plough could carry it—harrowed and sowed. The machine, having never before been used, worked irregularly, and the distance between the drills was too great. There was no thinning of the crop—not even one plant having been designedly pulled till harvesting.

Carrot Field, Dr.

1848.

May 10,	To 4 loads stable manure,	\$8 00
	“ 60 bushels ashes and loam,	3 69 (composted) \$11 60
	Carting, spreading, and ploughing same, .	4 00
	Ploughing and harrowing, . . .	1 00
May 16,	$\frac{1}{4}$ lb. seed and sowing, . . .	0 50
June,	Hoeing,	1 00
	Weeding,	3 00
July,	Weeding,	3 00
Oct.,	Self and horse, half day, ploughing out, .	1 00
	Man, $1\frac{1}{2}$ day, pulling and topping, .	1 50
	Self, 1 day topping,	1 00
	Two boys $1\frac{1}{2}$ day each,	1 50
		<hr/> \$29 10

From this amount, should be deducted \$7 71, for the reason that the whole amount of land sowed to carrots was 62 rods, while the amount, from which the above was derived, was 43 rods and three fourths.

So that the proper amount of expense chargeable to the piece actually measured, would be \$24 67, leaving a credit to be carried to the account of field, of

One third manure back for next crop, . . .	\$3 86
191 bushels of carrots, 56 lbs. at 25 cts., . . .	47 75
	<hr/>
	\$51 61

I say 191 bushels of carrots of 56 lbs. each. This product was obtained as follows:—The cart was taken to the field, the carrots, which had been pulled the day before, were topped and put into baskets,—each basket weighed by itself, (its weight set down,) and emptied, till no more carrots could be heaped upon the cart. In this manner, 40 bushels were weighed,—and, subsequently, the cart filled in the same manner, till the whole product was housed. By the bushel, of 56 lbs., the cart (a one horse cart) would hold, heaped till no more could lay upon it, but $17\frac{3}{4}$ bushels. There were 11 loads. But in actual ad-measurement, as baskets are ordinarily filled in the field, (heaped till no more would remain, though not placed in the basket with any particular care,) there were 223 bushels—ascertained by averaging the whole number of baskets actually weighed, and multiplying by the total number of baskets.

It will be seen, therefore, by this instance, that the tendency of the society's requirement, that each bushel should weigh 56 lbs., is to diminish the actual crop, when compared with crops raised in other places. To satisfy myself more thoroughly, I packed a basket as close as was possible—heaped it like the others, and I obtained but 57 lbs. weight, less the weight of the basket, $3\frac{3}{4}$ lbs.; so that, with careful packing, I doubt whether a bushel of carrots can be made to weigh 56 lbs. The weight of the bushel, obtained by weighing some 46 or 47 baskets, and averaging their weights, was, in this instance, $48\frac{1}{2}$ lbs. There is an intimation, in Stephen's Book of the Farm, when speaking of this crop, that 42 lbs. is the standard weight. The subject is of no consequence, except when our crops are placed in comparison with those of other places, where the standard weight may be less.

Wm. A. Wheeler's Statement.

The following is a statement of the product of carrots upon one and the same acre of ground on my farm in Worcester, for six consecutive years. The compost used for the last two years, was made of three fourths meadow weeds or muck, the other quarter of good stable manure :—

Carrot Crop, Dr.

1843. To 61 days labor, at 5s.,	\$50 83
" 6½ days, 1 pair oxen, at 5s.,	5 42
" 1 day, 2 horses,	1 50
" Manure,	18 00
" Sowing seed,	3 00
	<hr/>
	\$78 75

Cr.

1843. By 361 bushels carrots, at 25 cts. per bushel,	\$90 25
	<hr/>
Profit,	\$11 50

Dr.

1844. To 77 days labor, at 5s.,	\$64 17
" 17½ " 1 pair oxen, at 5s.,	14 59
" 12 cords manure,	36 00
" 3½ " compost,	10 50
	<hr/>
	\$125 25

Cr.

1844. By 710 bushels carrots, at 25 cts.,	\$177 50
	<hr/>
Profit,	\$52 25

Dr.

1845. To 79 days labor, at 5s. 6d.,	\$72 42
" 12 " 1 pair oxen, at 5s. 6d.,	11 00
" 2 " man and team,	3 33
" 13 cords compost, from yard, at \$2 50,	32 50
" 4½ cords manure, at \$3 50,	15 75
	<hr/>
	\$135 00

Cr.

1845. By 736 bushels carrots, at 25 cts., . \$184 00
 (206 bushels on one fourth acre.)

Profit, . \$49 00

Dr.

1846. To 18 cords weak compost, at \$2, . \$36 00
 " 81½ days labor by men, at 5s., . 67 92
 " 13½ " with team, at 5s., . 11 25
 " seed, 2 00

\$117 17

Cr.

1846. By 509 bushels carrots, at 25 cts., . \$127 25

Profit, . \$10 08

Dr.

1847. To 20 cords weak compost, at 10s. 6d., . \$35 00
 " 79½ days labor, by men, at 5s. 6d., . 72 83
 " 12½ " team, at 5s. 6d., . 11 25
 " seed, 1 75

\$120 83

Cr.

1847. By 700 bushels carrots, at 25 cts., . \$175 00

Profit, . \$54 17

Dr.

1848. To 25 cords weak compost, at 10s. 6d., . \$43 75
 " 73 days labor, by men, at 5s. 6d., . 66 92
 " 9½ " team, at 5s. 6d., . 8 33
 " seed, 1 25

\$120 25

Cr.

1848. By 1011 bushels carrots, at 25 cts., . \$252 75

Profit, . \$132 50

ESSEX AGRICULTURAL SOCIETY.

The thirty-first annual exhibition of this society was held at Lynn, on the 28th day of September last, and was attended by an unusually large number of persons, who manifested great interest in the occasion. The addition, by a gentleman of Lynn, of one hundred dollars to the amount of premiums offered on stock, had the desired effect to bring to the cattle-show a larger number of animals than is usually exhibited in this county. Seventeen pairs of working oxen, 11 pairs of steers, 8 fat cattle, 13 milch cows, 18 heifers, 9 bulls, and 15 colts, were entered for premiums, besides other animals, which were entered for exhibition only. The ploughing match was well contested by 16 double ox-teams, 6 single ox-teams, and 4 horse-teams. The exhibition of fruits gave the most convincing proof of the unabated zeal and success of our cultivators.

The address was delivered by Josiah Newhall, Esq., of Lynnfield.

HINTS FOR THE CONSIDERATION OF THE TRUSTEES.

At the meeting of the trustees, in November, the President of the society read a communication, from which the following extracts are made :—

The preservation of the ranks of our members has not received that attention its importance demands. Previous to the first exhibition of the society, about seven hundred names were enrolled. Since then, there have been additions annually, of such as voluntarily offered themselves, but not so many as have been lost by death and removals. Ought this to be so? Is the

object for which we associated of any less importance now than it was then? Is there less public spirit among our citizens now than there was then? Are they less able to encourage an institution of the kind, or less intelligent in appreciating its advantages? Few, we believe, will readily answer either of these inquiries affirmatively.

The continued liberality of the State, which has enabled the society to offer our premiums annually, although to a limited extent, and the adoption of a system of economy that has kept its expenditures within the income, have had a tendency to prevent the enlisting of new members; especially, while those who were not members were permitted to enjoy equal privileges, in competing for premiums, as those who were. If care had been taken to increase the funds by the addition of *seven hundred new members*, who have come upon the stage since our operations commenced, who would have been ready to join, if properly solicited to do so, this addition could have been advantageously appropriated, in the new modes of improvement that would have been brought forward.

In fact, those who have directed the concerns of the society have always felt themselves constrained, not by the want of objects of premium, but by the want of means to afford them; and by the desire to give permanency to the funds, that should enable the society to continue its operations, if, perchance, any thing should happen to discontinue the legislative bounty. But there is no reason to fear any such discontinuance. Among all the fanciful projects of economy that have been agitated, we have never heard an intimation of the expediency of withholding the bounty to agricultural societies. On the contrary, the appropriation has been very generally approved; and it remains with the farmers, themselves, to say, when, instead of *six hundred dollars* annually, there shall be given *one thousand dollars* annually, to each of the societies. Is this a visionary project? Could it not be done by a little exertion? Appoint your agents to solicit subscribers. Let a memorial be presented to the Legislature, setting forth the benefits to accrue therefrom; let the other societies in the Commonwealth be solicited to coöperate; and three chances out of four, another year would crown the

enterprise with success. There is nothing like trying. Something has been done for agriculture, but not so much as its relative importance demands. Who that remembers the eloquent remarks of the veteran advocate of the "plough, the loom, and the anvil," at our late exhibition, was not forcibly impressed with the conviction that the farmers have been faithless to themselves? Merchants and manufacturers do not act thus, when their interests need support. Let us summon to our aid a portion of that public spirit which characterized a PICKERING, and a SALTONSTALL, names that will ever be remembered with respect in the history of our society, and the work will be more than half accomplished. If farmers would be true to themselves, others would be true to them. If they will not, who can they blame but themselves? "He that provideth not for his own," as hath been truly said, "is worse than an infidel."

Whoever examines our Transactions for information will find it best condensed in the statements of the cultivation of entire farms, and the reports thereon. This should stimulate to renewed efforts to revive these premiums. Not, simply, the offer of them, but the bringing forward of claims to merit them. There is scarcely a town in the county that could not annually present the statement of the cultivation of some farm, that would be a source of useful instruction. If this information cannot be secured in the manner heretofore practised, let it be done as in the counties of Plymouth or Middlesex, by a viewing committee, who will seek out what is interesting, and not wait the tardy movement of the *diffident cultivator*. There are many, who will readily communicate, when solicited, who will not come forward of their own motion. Among these, three times out of four, is real merit most likely to be found.

We are somewhat flattered, when we see references to what has been done by our society, in obtaining and diffusing information; but have we not reason to be more mortified, when we reflect upon what we know has been left undone? I appeal to your candor, gentlemen, who should know the state of agriculture in the county, whether this is not so? Is there any of you, for example, who can, with any confidence, answer the inquiry:—What proportion of the bread stuffs, consumed in the

county, is raised in the county? I ask each of you, without consultation with others, to give me your opinion on this question. Hand in your ballots, if you please. Our notions on these subjects are apt to be vague and indefinite. It should be the aim of societies like this to correct them. The merchant, who wishes to conduct his business with success, has his correspondents in all directions, and understands, from them, the prospect and the state of the market. Before he undertakes to forward a cargo, he inquires whether it will be wanted, where it is to be sent. Why should not the farmer do the same, before he undertakes to plant his fields? True, he knows that a certain portion of produce will be needed for the consumption of his family, because his father before him raised about this amount. But the man who is ambitious of being considered an intelligent cultivator, should not rest satisfied with this knowledge. Is it not possible to adopt a plan of securing returns annually, from every town in the county, of such statistical information, as, when properly arranged, would be of great value? Who can so properly undertake this matter, as the Agricultural Society of the county? The State Society of New York requires this of every County Society. The State Society of Massachusetts, when under the guidance of a Lowell and other kindred spirits, used to do something to encourage and enlighten the farmers of the State. Since the County Societies have presumed to start ahead, the State Society seems to have been stationary. Any one, who sees what is doing, annually, in the State of New York, will be satisfied that much remains to be done in Massachusetts. A review of the State Agricultural Record will show that much remains to be done; and that new exertions are necessary, to enable us to keep pace with the improvements of the age.

Those, who had the privilege of being present at the early meetings of the trustees, will remember the interest that was awakened by the discussions that were introduced. Latterly, the meetings have been so entirely occupied with the transaction of business, that little or no time has been given to discussion. If the meetings could be more frequent, with an understanding that gentlemen would come prepared to commu-

nicate and receive instruction, the purposes of the Society might be more fully accomplished. It need not be imperative upon all to attend; let those who do come, bring with them such kindred spirits as are among their associates, and the meetings might be made a school for mutual instruction. Whatever is worth doing at all, is always worthy of being well done. Bearing in mind, that nothing can be accomplished that is not commenced, I have ventured to propose the foregoing considerations, to be acted on or not, as may be deemed expedient. If any, or all of them, shall be found worthy the attention of the board, at this, or any subsequent meeting, I shall feel that I have, in some measure, contributed to the advancement of the interests of the society.

ON FARMS.

Two farms were entered for premium, lying at two extremes of the county,—one in Methuen, the other in Lynn, near the line of Saugus. But they were not so far remote from each other in place, as they were in the character of their soil, and in their whole general appearance. The one in Methuen, entered by Leverett Bradley, is upon the Merrimack, and stretches along nearly a mile upon the bank of the river. The soil is inclining to sand. Probably there is not a rock upon the whole of it too large to be turned out by the plough. The accompanying statement of Mr. Bradley shows what it was a few years ago, and what it now is. Probably no farm in the county was more attractive in its appearance than was this, when your committee visited it in July. About 70 acres of grass in one body, which, in the opinion of the committee, would produce 2 tons of hay per acre, on the average, and 50 acres of rye, at that time ready for the harvest, adjoining, which could all be seen distinctly from Mr. Bradley's house, without a tree, a shrub, or a stone, to intercept the view, is a sight, rarely to be met with in the State, and, probably, in the county has no parallel. Indeed, very few farms can be found anywhere, which, for beauty of location, can equal this. Your committee are of opinion, that Mr. Brad-

ley, in the management of his farm, understands and applies the principle of the old Latin poet, which, next to manuring, is most important to the farmer:—

“What every soil will bear, and what refuse,
This corn, that vines, more kindly doth produce;
Young trees thrive best here, there grass freely grows,
And odorous saffron, *Timolus* bestows.”

The farm in Lynn, belonging to Henry B. Newhall, furnishes complete proof of the fact that it is much better for the farmer to clear new land at home, in New England, than to go abroad to do it. That part of Mr. Newhall's farm now under cultivation, containing about 15 acres, was bought by him, less than 10 years ago, for \$20 per acre. At that time, it was all covered with a moderate growth of wood, which seemed to spring up out of the crevices in the rocks, the land being apparently full of them. The sale of the wood paid for the land, for fencing it most substantially, for cutting and marketing, and left a small surplus in its favor—Mr. Newhall did not say how much. His statement shows how many rocks he has taken from the land, and to what account he has turned them, and he has “a few more of the same sort left.” It also shows what produce he has taken from his land, and at what expense. He has set out about 500 apple trees, and, the soil being admirably adapted for their growth, they appear in a most thrifty condition. Mr. Newhall's experiment shows what enterprise, well directed, is able to accomplish, and furnishes an example which it may be well for many of us to study and imitate. Literally, he has made the wilderness to bud and blossom as the rose, and, at the same time,—which is a most important element in the matter,—has been putting money into his pocket, instead of paying it out. But Mr. Newhall is just beginning. If he goes on as he has begun, he will, in a few years, have one of the most productive and profitable farms in the county. Mr. Newhall has a store in Lynn, which accounts for the prices he has set against some articles of produce.

The committee think the farm of Mr. Bradley entitled to the first premium, and, therefore, recommend that the first premium of \$25, be awarded to him.

They also recommend that the third premium of \$10 be awarded to Henry B. Newhall, of Lynn.

T. E. PAYSON, *Chairman.*

Leverett Bradley's Statement.

The farm, which I offer for premium, contains in all about 200 acres. Twenty-five acres, or thereabouts, are now covered with trees and bushes, which I have not attempted to clear. The remaining 175 acres are now in pasture, mowing, and tillage, very nearly in the following proportions, excepting about 2 acres covered by the buildings, enclosed as yards, &c., to wit: 70 acres mowing, 50 rye, 50 pasture, 3 potatoes. It is five years since I commenced any improvements. At that time, the whole quantity of hay, cut upon the entire farm, did not exceed 40 tons. Of this, a large proportion was meadow-grass, and of a poor quality. About 15 acres had been kept clear, for the purpose of tillage. The remainder of the 175 acres was covered with wood and bushes, in a great measure, there being some open land among them, which was used for pasture; 20 acres, at least, of what is now mowing, would have been considered almost worthless. I have, this year, about 70 acres in mowing, which has averaged 2 tons of hay per acre. The quality of the hay you can determine from what you saw of it in July. About 30 of this 70 acres of grass-land is a reclaimed bog. It has cost me about \$40 per acre to bring the remainder of my grass-land into the state in which you saw it. I have gained about 25 tons of hay per year, for four years, and as much in quality as quantity, over the hay formerly cut.

The rye, on my 50 acres, averaged 20 bushels per acre. This land I seeded down to grass, and intend it for pasture another year. The crop of rye and the straw will pay for the labor of reducing the land to a state of cultivation, and for seeding it to grass. The 50 acres in pasture, I intend to seed in the same manner another year, with rye and grass, and alternate from year to year, feeding one year, and cropping with rye the next.

and I think that I can thereby keep the land up to its present condition. Most of my rye-land, as you perceived, was pretty full of stumps, which gives you an idea of its former state. The wood, which I have taken from it, has paid me about \$1000 above all expenses. My 3 acres of potatoes gave me an average yield of about 75 bushels per acre.

There were about 300 old apple trees upon the farm, all of which have been grafted anew. In addition, I have had put down, within the last and the previous year, 1000 apple trees, and about 300 peach trees. The produce of my old trees was about 15 barrels, this year.

Formerly, I have kept 20 cows, and sold the milk, a market for which is furnished by the new town of Lawrence. This year, I have no dairy, except for private use,—my stock consisting of 8 oxen, 4 horses, and a few small cattle.

METHUEN, November 14, 1848.

Henry B. Newhall's Statement.

Cost of Land.

160 acres, at \$20 per acre, . . .	\$320 00	
Cost of walling land, . . .	110 00	
	<hr/>	\$430 00
Wood cut and sold, . . .	\$600 00	
Cost of cutting and teaming, . . .	150 00	450 00

Stones taken from said Land.

Laid in cellar-wall, . . .	28,000 ft.	
" in wells, . . .	5,000 ft.	
" out on landing, . . .	2,600 ft.	
	<hr/>	35,000 feet.
" in stone-wall, . . .		400 rods.

Crops.

1844.

1st year. 300 bush. potatoes, at 60 cts. . . .	\$180 00
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1845.

2d year.	350 bush. potatoes, at 80 cts.,	\$280 00	
"	100 " rye, at \$1 12½ "	108 00	
"	60 " turnips, at 20 "	12 00	
"	20 doz. cabbages, at 75 "	15 00	
"	2,100 lbs. marrow squash, at 3 cts.	63 00	
		<hr/>	\$478 00

1846.

3d year.	10 tons of hay, at \$20,	\$200 00	
"	160 bush. corn, at \$1,	160 00	
"	50 doz. cabbages, at 75 cts.	37 50	
"	70 bush. turnips, at 20 "	14 00	
"	1,056 lbs. marrow squash, at 3 cts.	31 68	
"	65 bush. onions, at 60 cts.	39 00	
"	300 " potatoes, at \$1,	300 00	
		<hr/>	782 18

1847.

4th year.	200 bush. potatoes, at \$1,	\$200 00	
"	60 " onions, at 75 cts.	45 00	
"	45 " turnips, at 20 cts.	9 00	
"	60 doz. cabbages, at 75 cts.	45 00	
"	175 bush. corn, at \$1,	175 00	
"	14 tons of hay, at \$18,	252 00	
		<hr/>	726 00

\$2,166 18

Expense of labor, seed, and manure, . . . 1,200 00

\$966 18

Crops will be this year about the same as last. Apple trees,
550 were set from 1 to 4 years.

LYNN, *November*, 1848.

MEADOW AND SWAMP LANDS.

There have been four entries of claims for premiums, the
past year, for improving wet meadow and swamp lands. The

committee recommend that the premiums be given as follows, viz:—

- To Leverett Bradley, of Methuen, the first premium of \$20 00
“ Stephen Osborn, of Danvers, the second premium of 15 00
“ Richard Dodge, of Wenham, the third premium of 10 00
“ R. A. Merriam, of Topsfield, the fourth premium of Colman's European Agriculture.

The committee would state, that the land of Dr. Merriam, which was part of a sunken swamp, and part plain meadow, would have stood more prominent, had it not been encountered by powerful competitors. His land was well drained, with good and sufficient ditches; it seemed as if it had been formerly encumbered with stagnant waters; and, as it was neither springy, nor surrounded by springs, marginal ditches were not required. His method of merely spreading the mud from the intermediate spaces between ditches, and the expensive mode of spreading summer dung, or even compost, (if coarse gravel or loam could have been obtained,) would not be so highly approved by those who have experienced the good effects of the latter on meadow lands. He yet thinks well of gravelling, and recommends it, with only smoothing the surface. Many good farmers are still of opinion, that both ploughing, (where it is practicable,) and gravelling, are important.

The situation of Mr. Bradley's land is in a very gentle swale, extending towards the Merrimack river, with a main ditch, which he has dug wide and deep through the centre, and with cross ditches on either side leading to the same. It is naturally a rich alluvion; but the committee can give Mr. Bradley no credit for the bounties of Nature, yet they cheerfully award to him much credit for the management of the great agricultural enterprise in which he is engaged. Thirty acres, in a body, of well improved meadow land, producing, for several years in succession, two and a half tons to the acre, is seldom seen. Sufficient evidence of this produce we had from one of our committee, who visited it in July, while the crop was standing, and who remarked, that this extensive tract of “fine English grass growing, would delight the eyes of the beholder.” At

the last visit, we availed ourselves of the testimony of the Committee on Farms, who were present at that time, and to whom we were indebted for many just remarks. All testified their belief, that such was the uniform produce. Before the last visit, the devouring element of fire had deprived Mr. Bradley and ourselves of examining the quality of the hay, and him of his large barn and all its contents of grain and hay.

The committee were also much pleased with all Mr. Bradley's improvements, opening to view, delightful prospects on the banks of the Merrimack. But we were more particularly interested in his wet meadow improvements. At the head of the swale, we observed a lot of several acres of shaking meadow, recently improved, which evidently bore his best grass, and adjoining a worthless quagmire swamp, which was a sample of his land before he commenced operations. On this improved lot, he had smoothed off the stumps so close as not to interfere with the scythe, thus saving the expense of digging them out, which seemed perfectly to answer all purposes. The committee regret, however, that Mr. Bradley had not given a more detailed account in his statement, of his whole process, and "of all incidental expenses." About five acres, as he has stated, he ploughed and seeded without any gravel; this, it seemed evident by the stubble, was the least productive, and of poorer quality of grass, than on the other parts.

Mr. Osborn, having favored us with so full a statement, it will be unnecessary for the committee to comment here so much at large. He seems to have proceeded according to the present most approved methods, by thoroughly ditching and thoroughly gravelling a lot of apparently poor land, formerly allotted as a parsonage, adjoining the village of South Danvers; his meadow surrounded by sharp rocky knolls. He has favored us with a carefully executed plan of his very ingenious method of ploughing, by means of a running tackle, or snatch-block, which may easily be applied in ploughing very soft and wet meadows. We saw a sample of Mr. Osborn's hay from his reclaimed meadow, and pronounce it of the first quality.

Mr. Dodge having also given a full, and somewhat detailed statement of his process, his expenses, and the produce of his

land for several years, we are satisfied, from a careful examination, of the correctness of his statement in all particulars. And we would not omit to mention his worthy example of enterprise, industry and perseverance.

TEMPLE CUTLER, *Chairman.*

Leverett Bradley's Statement.

I offer for premium a meadow, containing about 30 acres. The soil is inclining to peat, and varies from 2 to 10 feet in depth. On some parts of it, 3 or 4 feet below the surface, logs abound. Previous to the year 1842, the produce of the open part of it was a coarse meadow grass. About one third part of it was covered with bushes, and, during the entire year, except, perhaps, a very short time in summer, water stood upon the whole of it.

In the year 1842, I commenced my improvements. Between that year and the year 1846, I have dug upwards of 1000 rods of ditches. My main ditch is about 100 rods in length, $5\frac{1}{2}$ feet wide at the surface, and, through its whole length, dug to the hard pan at bottom. The other ditches average $2\frac{1}{2}$ or 3 feet in width at the surface; all dug to the pan. The clearings of the ditches furnish the best material for compost, and, without any admixture, make a very good top-dressing. About 5 acres of the meadow was ploughed and seeded without any gravel spread upon the surface. The remaining 25 acres were not ploughed, but gravel was spread on the surface to the depth of about 3 inches. My estimate of the cost of the land—including its original value, cost of labor and seed—is \$100 per acre—I mean its original value and the cost of all improvement.

The first year, I have usually cut about half a ton per acre. The second year, I top-dress with about 10 carts full to the acre of a compost, the principal ingredient of which is sand. The second year, I have cut, generally, $2\frac{1}{2}$ tons per acre. I think it better to top-dress, as above stated, once in two years.

This season, the crop, as the committee observed before it was cut, averaged $2\frac{1}{2}$ tons to the acre.

METHUEN, October 23d, 1848.

Stephen Osborn's Statement.

The lot of land, to which I ask the attention of the Committee, contains about five acres, of which about an acre and a quarter is meadow. In 1844, I cut off the bushes and small trees. This was done at the time of the summer solstice,—the latter part of June,—from which time the roots began to decay, and, with some few exceptions, they never again sent forth their sprouts. I selected this period of the year for the purpose, by the advice of an intelligent and observing farmer, now removed to Worcester county, who had cut bushes from his own land, at a similar time, and with the same success.

In 1845, I opened the main ditch through the centre of the lot, and commenced ploughing. Although the season was very dry, the meadow was too wet and soft to allow cattle to travel over it, and I was obliged to resort to an expedient, which I will attempt to describe, with the aid of a rough sketch, on paper, which I send with this statement. I attached a block, with a single pulley, to the trees on the upland, near the edge of the meadow, through which one end of a rope communicated with a light plough, on the opposite side of the low ground, while the other was attached to the draft chain of a pair of cattle, who were driven on the upland, a course at right angles with that of the furrows. After the first five or six furrows, the block was placed the proper distance from the tree to make a second series of furrows, the block being secured, in its new position, by a strong bar, set in the ground. The block was thus removed its proper distance, for each successive series of furrows, until the land was ploughed, the plough being each time drawn, by hand, back to the opposite side of the meadow. I may here remark, that the land may be back-furrowed into beds, by securing the block on the opposite side, and ploughing in that direction. During the ploughing, the land was so wet that the water followed the plough in the furrow. As to the comparative cost of this method of ploughing, the committee will be able to judge from the fact, that the work was done in three days and a half, with one pair of cattle; two men, and a

boy. After ploughing, I cut cross ditches on each side, communicating with the main drain; I then removed the gravel from the upland, in wheel-barrows, to the meadow, to the depth of about three inches. As the land was a soft quagmire, boards were laid over it, on which to wheel the gravel. In the following winter, I dressed the land with a compost of anthracite coal ashes, soil, waste lime, &c., from tanneries, the whole being well saturated with soap-boiler's spent ley. In the spring of 1846, I sowed it with one and a half bushels red-top, one and a half pecks herds-grass, and two pounds clover, and cut, that year, two tons of English hay, of good quality. In 1847, the same lot of one acre and a quarter of land, yielded four tons.

This year, 1848, the yield from the same land has been four tons 220 lbs. of English hay, equal to upland.

The expenses and yield of the reclaimed land were as follows:—

Ploughing,	.	.	.	.	.	\$14 18
Ditching and gravelling,	.	.	.	.	.	18 00
Compost,	.	.	.	.	.	7 50
Grass seed,	.	.	.	.	.	3 39
						<hr/>
						\$43 07
<i>Crops.</i>						
1846—2 tons hay, at \$16,	.	.	.	.	.	\$32 00
1847—4 " "	.	.	.	.	.	64 00
1848—4½ " at \$12, (sold from the field,) .	.	.	.	.	.	49 32
						<hr/>
						145 32
Deduct \$4 per ton, for making,	.	.	.	.	.	40 00
						<hr/>
Income for three years,	.	.	.	.	.	\$105 32

I ought to have stated, that the plough used had a circular cutter attached to the roller, which did much to facilitate the work. The soil or bog, before ploughing, was from two to six feet in depth, resting on a hard sub-soil of sandy clay. Since ditching and gravelling, the bog has settled a foot or more. The land was of little or no value before draining. The ditches

which I have covered, operate so well, that I intend to cover the remainder. I filled the bottom of the ditch with small stones, to a gradual descent from the margin to the main ditch. I then placed two rows of larger stones down the centre of the ditch, and covered them with the flattest that I could select, and then covered the whole with currier's leather shavings, these being about a foot below the surface of the ground.

DANVERS, *Sept.* 20, 1848.

Richard Dodge's Statement.

The piece of reclaimed wet meadow, which I present for the consideration of the committee, containing about two acres and three quarters, was, in 1838, a sunken quagmire, almost entirely worthless, except for some small fuel, such as alders, blueberry bushes, brambles, and grape vines, and, occasionally, a tree.

In the fall of that year, it being dry, I burnt over the whole swamp, clearing up, as soon as the fire was out, all stumps and roots that remained unburnt. The fire had burnt out many holes, as this peat soil was loose and deep, and many of these holes a foot or a foot and a half deep. I then smoothed off all the humps, broken roots, &c., filling up all the burnt holes, making the meadow smooth. This clearing up was only upon the one and a half acres now in mowing. The whole was then well drained, by making three large and deep ditches lengthwise, one through the centre, between the present mowing and tillage lots, and one on each side. These ditches were three feet or more deep, four feet wide at the top, and three at the bottom. Also, a wide ditch across the lower end. The fuel I obtained from the stumps has paid, I think, all the expense of getting them out, as men had made the offer to do this work for the fuel. I, therefore, consider my expenses as paid up to the spring of 1843, except that of hauling on and spreading about two inches of sandy loam and gravel from an adjoining pit, over the greatest part of the one and a half acres. The re-

mainder, I covered afterwards, and harrowed and smoothed the whole in the best manner I could, and then planted three fourths of an acre with potatoes, without any manure. The ashes from the burning and the loam I valued much. Roans, long reds, and chenangoes, were planted, and, at harvesting, 12 hills made a bushel throughout. Cross ditches were made from the marginal to the main ditch, with the plough, and by clearing them out with the hoe.

Two years from the commencement, I finished the remainder of the one and a half acres in the same manner, using no manure until the third year, when I put four cords on the whole, having obtained, in each year, about the same value, in crops of corn and potatoes, as at first. These crops even more than paid all expenses to 1843. I then hauled, in the winter of 1842, a common top-dressing of sandy loam, and laid the whole down to grass, sowing a peck of herds-grass and half a bushel of red-top, per acre, after ploughing and harrowing well.

Produce of the one and a half acres for six years.

1843—3 tons first crop, at \$15 per ton, . . .	\$45 00
1844—5 “ “ 2 do. 2d crop, at \$14 00,	98 00
1845—5 “ “ 2 do. “ 14 00,	98 00
1846—5 “ “ 2 do. “ 18 00,	126 00
1847—5 “ “ 13 50,	67 50
1848—4½ “ “ 9 50,	42 50
<hr/>	
Whole number, 33½ tons. Sold for . . .	\$477 00
Expense of seed, harvesting, &c., . . .	60 00
<hr/>	
Net amount for six years, . . .	\$417 00

Thus, it will be seen, that a large crop of hay has been raised six years in succession, without any additional top-dressing of any kind, and only four cords of manure, which was put on at the commencement. I consider the loam and gravel of more value for such grass land, than manure, if applied as a top-dressing.

By careful examination, I find the whole cost of reclamation did not exceed sixty dollars per acre.

The corn, on the other part of one and a quarter acres, is estimated at sixty bushels per acre, and, of the potatoes already dug, 20 hills made a bushel. This lot was managed much in the same manner as the one described. It has been planted three years; the smallest crop the present year. Sandy loam was put on the part planted with corn.

WENHAM, *Sept. 27, 1848.*

R. A. Merriam's Statement.

I offer for premium about four acres of partly meadow and partly swamp land, to which I have been devoting some attention, for the purpose of reclaiming it from a nearly useless state. I began about six years ago, (after my neighbor, below, had opened a thorough water-course,) by ditching and covering the intermediate spaces with the mud that was thrown out. These ditches were cut from the main one to the shore, about thirty feet apart, wide and deep enough to afford a perfect covering for the spaces between. After levelling and smoothing, I sowed hay seed, &c., raked it in, about a peck of herds-grass, and one bushel of red-top seed to the acre. Without any other preparation, I cut from one to two tons of English grass to the acre. The quantity of grass lessened in the course of a year or two, and I then spread on about five cords of compost manure to the acre, in the fall, which increased the amount of hay to between two and three tons to the acre, and most of the meadow that I have worked upon is now in this state.

But the piece, to which I have invited your attention, consisted mostly of bushes, from four to ten feet high, high blueberries, alder and swamp sumac or dogwood. This piece, containing about one and a quarter acres, was reclaimed, by cutting and burning the bushes on the ground. On a part, the whole surface was removed, piled in heaps two years ago last spring, and, in the fall, burned. On another part, the surface only was smoothed, removing the stumps and rubbish from the ground. I sowed the usual quantity of hay seed over the whole,

and raked it in with an iron rake. I found it a little more difficult to get the seed to take where the surface was not disturbed, and a natural grass, called bluejoint, had taken the place.

In 1847, I cut, from the one and a quarter acres, about two tons of hay, mostly herds-grass and red-top. After haying, I put, upon this acre and a quarter, about five cords of summer manure; this year, 1848, I cut from four to five tons of good English hay, not differing in amount from what you estimated it at.

The roots and fuel taken from this land were worth about fifteen dollars. The cost, over and above upland tillage ground, may be fairly estimated at between twenty and thirty dollars, varying a little on different lands. On some small portions, I have spread about two inches of coarse gravel, after sowing the hay seed. The cost of this method will be about the same; and I am inclined to the opinion that this is the better method of reclaiming bog meadow land, where bushes do not cover the ground.

Where you intend to cover with gravel, the hassocks and all prominences should be first removed, and as even a surface left as possible; then sow the hay seed, and cover with about two inches of gravel. The gravelly portions of my meadow seemed to stand any weather better than the portion that was not gravelled.

TOPSFIELD, *Sept.* 27, 1848.

MILCH Cows.

The many necessities and luxuries of life, and the sources of industry and income, which, directly or indirectly, receive their origin from the cow, place her among the invaluable blessings with which a beneficent Providence has favored us. To improve the cow, so as to produce better milkers, with form, size, and constitution, best adapted to our fare and climate, should be the studious solicitude of all engaged in rearing neat stock.

How this can be best effected, experienced and intelligent men differ in opinion. Here, the chairman of your committee will venture a few remarks, and for which he is alone responsible.

Having, more than twenty years since, introduced the Durham short horns into my stock, and subsequently other approved breeds, I can speak from experience; and, although three of the best cows I have ever owned, were of the cross breed, yet I think, on the whole, the milking qualities of my stock has not thereby been improved. If there have been exceptions, I have found, in the aggregate, the Durhams give less milk than the natives, in proportion to the food they consume, and their milk is of a poorer quality. I much prefer the half blood Durhams to the natives for oxen; they are of better form, larger size, and faster travellers. The objections brought against them by some, that they possess constitutions not adapted to our hard climate, I have not yet, from experience or observation, found correct. I have seen them severely tested in the log swamp in winter; on the farm and road in summer, for a period of six years, and, at the age of ten years, fatted, and have never known their equals that were of the native breed. If the Durhams are not the better milkers, they are better for the stock-grower, and should be encouraged in proportion as that branch of husbandry should be encouraged in the county. Whether the improved short horns have, or have not, received, in this county, the premiums they were justly entitled to, I do not here pretend to say; but I do say, that I prefer a good animal to a favorite pedigree. Those that would derive a good profit from the cow, must give her good keeping, as a large portion of the nourishment she takes, is necessary to supply the natural waste of the body; if she has no more than is necessary for that supply, all you get in milk you lose in flesh, and lose the keeping of your cows. How to keep a cow, so as to derive the greatest profit, is a matter of importance to those engaged in this occupation. Much depends on the feed, and as much on the manner of feeding and sheltering. The oftener you feed, the less waste of fodder, and the better the cow will thrive. In this, every one must be governed by circumstances, taking into account the value of the time of the feeder, the

number of cows to be fed, &c. Any one accustomed to milking, in winter, has often noticed how greatly the quantity of milk has diminished, in severe cold weather. This proves the importance of warm barns; and dry beds are also necessary. Abridge her comforts, and you diminish her milk, and no one will say that she is as comfortable if she lies with her sides soaked in urine, as she would be if she had a dry bed. An intelligent farmer, who keeps a large stock of cattle, recently told me that he was in the habit of spreading thatch upon his grass land, and, for every ton of thatch, he got an additional ton of English hay. Straw, thatch, and damaged salt hay are abundant in most parts of the county, and, if used for cattle to lie upon, and saturated with urine, their value for manure would be greatly increased. Who would not prefer coarse fare and good lodging, to a sumptuous supper and a cold wet bed?

If cows have animal feeling, judge of their wants by your own. Kind treatment is of the first importance. Many good cows are made worthless to their petulant managers, from abusive treatment. The cow, from fear, or pain, on account of soreness of the udder or teats, is often unquiet when milked, and, being tied by the neck, and having no other means of defence, kicks, to rid herself of her uncomfortable companion. This not unfrequently induces the intelligent and reasoning milker to retaliate with harsh words and heavy blows, reasoning, no doubt, (if reasoning at all,) that, by so doing, she may be persuaded that she is in no danger of harm, while under such a protector. The stupid animal, not appreciating the argument, again resorts to her only defence, and the milker again resumes his argument with more powerful appeals to her sides, and, for a time, she is spoiled from downright stupidity. But which is the more stupid, which the more rational, or the more brutal, the cow or the milker, no one will, for a moment, hesitate to decide. Such cows can, nineteen cases in twenty, be reclaimed in a few weeks, by kind words and gentle treatment. Here I say what I know from experience. Having, for more than ten years, been in the habit of purchasing such cows, when offered for a few dollars less than would otherwise have been their value. I have, within a few years, bought two kicking

cows, and both are now gentle milkers. That all cows are equally docile, I do not pretend to say. It is far otherwise. Some cows require much caressing, such as currying, feeding from the hand, &c., before they can, at all times, be approached without showing signs of fear. It is a well-known fact, that animals of the most ferocious character are trained to dwell harmoniously together. If lions and tigers may be tamed, how little, comparatively, is the skill required to tame the most gentle domestic animal!

Our climate is well adapted to the health of the cow, and, with proper care, there is but little loss to the owners from disease. Yet her diseases should be known and attended to. Nature must be the principal agent in effecting a cure. Comfortable shelter and appropriate food, are, in most cases, the best prescriptions.

D. S. CALDWELL, *Chairman.*

ON THE DAIRY.

The committee recommend that premiums be awarded as follows, viz:—

For June butter, the first premium of \$10, to Charles P. Preston, of Danvers. The second premium of \$8, to Benjamin Boynton, of Andover.

For September butter, the first premium of \$10, to Nathaniel Felton, of Danvers; the second premium of \$8, to Charles P. Preston, of Danvers; and the third premium of \$6, to Benjamin Boynton, of Andover.

There was also presented to the notice of the committee, a very fine specimen of new milk cheese, by William Marshall, of Essex, 3 offered as a sample of 100 cheeses, made the past season, weighing, in the aggregate, 3,000 lbs. There being no premium for cheese offered by the society, the present year, your committee recommend a gratuity of \$8.

LEWIS ALLEN, *Chairman.*

Charles P. Preston's Statement.

I present, for inspection, 1 pot of June butter, containing 29 lbs., being a specimen of 289 lbs., made between the 1st of June and 9th of July, from the milk of 7 cows and a 2 year old heifer.

Also, 2 boxes of September butter, containing 29 lbs., being a sample of 793 lbs., made between the 20th of May and the 27th of September, from the same cows.

Their feed has been common pasture, until the 5th of August; since that time, green corn fodder once a day.

Process of making.—The milk is strained into tin pans, and placed in a cool cellar, where it stands from 36 to 48 hours, according to the weather. It is then skimmed, and the cream is put into stone jars, set in a vault made for that purpose, and churned once a week. The butter-milk is worked out thoroughly, and the butter is salted by an ounce of ground rock-salt to the pound.

DANVERS, *September 27, 1848.*

Benjamin Boynton's Statement.

I present, as a specimen of June butter, a jar of 28 lbs., being a sample of 117 lbs., of the same month. This butter was made from the milk of 4 (native breed) cows; their feed, in winter, being corn-fodder, straw and meadow-hay, the forepart of the winter, and, four weeks before they came in, a mixture of English and meadow, and, after they came in, English hay only; in summer, pasturing only.

Process of making.—The milk is strained into tin pans, and stands about 48 hours; the cream is then taken off and put into a tin cream-pail, and kept until it is ready to be churned, which is twice a week; and, after the butter has come, it is salted with 7 ounces of salt to 8 lbs. of butter, and worked over twice, when it is ready for use. We use the dash churn.

Also, a jar of September butter. The process of making, the same as the June butter. Since June, we have made 313 lbs. butter, and 190 lbs. four-meal cheese. Since August 10th, we have fed our cows on fodder-corn.

We have an ice-cellar, and, since July, we have had ice in our milk-cellar, more or less, which has kept it about the temperature of 62 degrees. This keeps the milk a greater length of time. Twelve hours before churning, we set our cream-pail on ice, to cool the cream, which always produces hard butter.

ANDOVER, *September 26, 1848.*

Nathaniel Felton's Statement.

I offer, for inspection, 3 boxes of September butter, containing 27 lbs., being a sample of 768 lbs., made between the 20th of May and the 20th of September. I milked 7 cows till the 10th of August, since then, 8. The feed was common pasturing, till the middle of August; after that, they had corn-stalks once a day, till the first of September; since then, twice a day. We have used milk for nine in the family, and sold two gallons a week.

Process of making.—The milk is strained into tin pans; it stands from 36 to 48 hours in a cool cellar, when the cream is taken off, put into tin pails, and stirred every day. We churn once a week; during the warmest weather, the cream is placed in the well about twelve hours before churning. After it is churned, the butter-milk is thoroughly worked out, and the butter is salted to the taste, (about an ounce to a pound.) After standing about an hour, it is again worked and weighed, each pound separately.

DANVERS, *September 27, 1848.*

William Marshall's Statement.

I offer, for premium, a specimen (about 100 lbs.) of new milk

cheese, made upon my farm, at Hog Island, in the town of Essex. I have had the milk of 15 cows, through the season. We began to make new milk cheese exclusively, (or nearly so,) about the middle of May last, and, with the exception of a few days, have made one cheese a day, of about 30 pounds weight, up to the 3d of September. The whole number is 101, and the whole weight about 3000 lbs.

Our method has been, to take the cream off of the night's milk, every morning, then to warm the milk, and, when brought to the temperature of new milk, to put all the cream into it again, and add the morning's milk, while warm. Our reason for not warming the cream, is to avoid the oily appearance which it always takes on being warmed. The milk at night is strained into tubs, which saves the trouble and expense of milk pans. I never put coloring matter, of any kind, into the cheese, or upon the outside. A cotton cloth is sewed round every cheese, on taking it from the press. We keep them in the press 48 hours, during which time they are turned twice. After going on to the shelves, they are turned every day, and rubbed with fat of some kind. We use the fine salt that usually comes in bags of about 25 lbs. each, and put a pint, wine measure, into every cheese of 30 lbs. weight. The quantity of rennet is always such as to have the curd form, and be ready to break up in about three-quarters of an hour after it is put in. The rennet is allowed to soak about 24 hours before use. We find that one fourth part more rennet is necessary for new milk cheese than for other cheese. We use the common lever press.

The cows have a change of feed by going about two weeks in each pasture. They have had no fall-feed, no roots or meal, nothing but pasture grass.

Essex, *September 27*, 1848.

FATTENING CATTLE AND SWINE.

There has been no application for premium, the present year, for fattening cattle or swine. In the county of Essex, there is

but little stock raised and fattened expressly for the butcher, as it is not considered profitable. Considerable stock must necessarily be fattened; old cattle must be turned off, and young ones take their places. Some farmers have made it profitable by purchasing cattle in the spring, putting them into a good pasture, and selling them to the butcher, in the latter part of summer, or early in autumn, before the droves come in from the country, as they then command a higher price than later in the season. But this cannot be done successfully, unless the pastures are very good, which is not, generally, the case. Cattle should always be kept in good flesh, for several reasons. Cows will give more milk, and of better quality. Oxen will perform more labor. Should a leg be broken, or some other accident happen, they will not be a total loss. Or, should beef be unusually high, they can easily be prepared for the butcher. Besides, it is much pleasanter seeing the stalls filled with fat, smooth cattle, than those like Pharaoh's lean kine. And, that cattle may be kept in good flesh, pastures should not be overstocked, and, when the feed grows short, as it usually does in the latter part of summer and autumn, they should be fed on green corn, or something else raised for the purpose.

Much attention should be paid to feeding cattle in the winter. They should also be well watered, and kept warm. It is better to keep them in the barn for the most part of the time, in extreme cold weather, than to leave them out, shivering behind the fence.

If they are designed for beef in the spring, and are as fleshy in the fall, as they should be, by giving them a few roots, or a little meal, with good hay and careful attention, they can be made good beef. A few years ago, I commenced raising ruta бага and beets, for fattening cattle. I had good success, and considered them a profitable crop. Soon, however, they began to depreciate; the ruta бага rotted in the field; now, I consider them an uncertain crop, and have discontinued to cultivate them. I am also of the opinion, that the profit of fattening cattle in winter is rather small, especially to those farmers who have a market near for their hay.

In regard to fattening swine, as the potato crop has failed, I

know of nothing better than corn-meal; although apples, roots, and vegetables may be used in the summer and fall, to some extent. Swine should be kept well, and the sooner they are fattened the better. A pig that will weigh 300 pounds, when 10 months old, is more profitable, than if kept until it is 15 months old, to weigh the same. That swine may thrive well, they should be fed regularly—I mean about the same time every day. When the time arrives that they are usually fed, they will be squealing at the trough; or, if they are of more quiet disposition, they will be looking with intense anxiety for their usual repast. Remaining in this situation, they will not thrive so well as when they are regularly fed, and return quietly to their nest. They should also have a warm place to eat and sleep. Although they like to wallow in the mire, still they like a warm bed. The question is often asked, is it profitable to raise pork? or, how the price of pork should compare with corn, that the pork may pay for the feed, and the manure for the trouble?

One year, I raised about 5,000 pounds of pork, and kept an account of what the swine eat. They were kept mostly on corn-meal, with some apples and potatoes in the fall. The food was mostly cooked. Reckoning the corn at 75 cents per bushel, the potatoes, apples, and what they received from the dairy, at what I supposed they were worth, when compared with corn, the pork cost about $7\frac{1}{2}$ cents per pound, offsetting the manure against the labor. The swine were of a good kind, and did well.

In regard to cooking meal for swine, there are different opinions. I tried an experiment, in 1841, which was published in the Transactions of the Society, for that year. The result was in favor of *uncooked* meal. But, as many farmers have a different opinion, I wish further experiments might be made upon the subject.

Since making the above statements, a communication has been received from Francis Dodge, of Danvers, the object of which is to show the expense of raising pork. The committee consider it not to come within the rules of the society for pre-

mum, but recommend that five dollars, as a gratuity, be paid Mr. Dodge for the information he has submitted.

JOSEPH HOW, *Chairman.*

Francis Dodge's Statement.

Believing it might be of some advantage to the farmers of Essex county to know the actual cost of fattening swine, I herewith submit an account of the cost and keeping of seven. They were bought from a drove on the 24th of April, 1848. Their whole weight, at that time, was 925 lbs., for which seven cents per lb. was paid. Their respective weights were as follows:—

	Weight when bought.	Time when killed.	Weight when killed.	Net gain.	Days kept.
No. 1	110	Sept. 25	253	143	154
" 2	140	Oct. 17	283	143	176
" 3	130	" 17	334	204	176
" 4	131	Nov. 6	281	150	196
" 5	116	" 6	314	198	196
" 6	146	" 8	339	193	198
" 7	152	" 8	374	222	198
	<hr/> 925		<hr/> 2178	<hr/> 1253	<hr/> 1294

The cost of food was as follows:—

68 bushels of corn, at 53 cts., . . .	\$36 04
30 " damaged do., at 35 cts., . . .	10 50
50 " corn, at 65 cts., . . .	32 50
8 " meal, at 65 cts., . . .	5 20

\$84 24

Add cost of pigs, 64 75

Total cost, \$148 99

We have, then, the cost of pigs, amounting to one hundred forty-eight dollars ninety-nine cents, against 2178 lbs. of pork,

at $6\frac{1}{2}$ cents per lb., (at which price it was sold,) amounting to one hundred forty-one dollars fifty-seven cents, leaving a balance against the pigs, of seven dollars and forty-two cents. These pigs were fed three times a day on meal and water, and properly cared for in every respect; and, in similar circumstances, it is but fair to expect the same results, and shall we, from these results, conclude that pork cannot be fattened in Essex county without loss? I think it cannot, when the farmer purchases his pigs in the spring at a high price, and his corn at any price, though it may be the lowest market price, looking entirely, for his return, to the market value of his hogs. But there is another return, in the shape of manure, that will repay him for all the trouble he has, and richly too, if proper care has been taken to throw them occasionally a load of mud, soil, or something of the kind, which they convert into the best and richest of manures. I am convinced, that it would be better and more profitable for the farmer to raise his own pigs, and not give the profit to the drover. Certainly, if he cannot afford to fatten and sell pork at $6\frac{1}{2}$ cents per lb., he cannot afford to buy pigs alive for 7 cents per lb.

DANVERS, *November 13, 1848.*

COMPARATIVE VALUE OF CROPS, &c.

The committee on the "comparative value of crops as food for cattle," regret that it is not in their power to award the liberal premiums offered. These offers have been before the public for several years, without awakening that attention in the minds of cultivators their importance demands. When we take into view the fact, that so large a portion of the time of the farmer, both in summer and winter, is occupied in securing or distributing the food of his cattle; it cannot be otherwise than a matter of deep interest, to regulate this labor to the best advantage. If, therefore, by any suggestions in our power to offer, valuable information may be elicited or disseminated, we shall, in part at least, have discharged our duty. If we can be so fortunate, as

to induce any one to undertake a series of accurate experiments, to test the truth or fallacy of our conjectures, an important point will be gained. We are fully sensible that facts, derived from a continued series of observations, are wanting on this subject. We are surprised, that those most interested in these matters, should be willing to remain so imperfectly informed, as are a large proportion of the farming community.

English hay is proposed as the test of the comparative value of the other articles used. This is so generally used, so valuable, and of so uniform a character, that it may well have this distinction. Tabular statements, from time to time, have been published, varying with the experience of those who framed them, giving general views, approximating, without doubt, to correctness. One of this kind can be found in the Report of the Commissioner of Patents, for 1843, page 120, from which an abstract was taken in our Transactions for 1844, page 33. But we are not quite satisfied, for instance, with being informed that 275 pounds of green stalks of Indian corn are equal to 100 lbs. of hay, or that $2\frac{3}{4}$ pounds of green corn fodder equals 1 lb. of hay. We want to know something further about it. We want to know, for example, how this kind of feed will operate on a stock of milch cows, by increasing the quantity, or improving the quality, of their milk. In the vicinity of a dense population, supplying the market with milk is one of the best applications of the produce of the farm. Many expedients are adopted, to furnish food, when the ordinary supplies are cut off; as, when the pasture lands are parched with drought, in August and September. Perhaps no one auxiliary has come into more general use, than green corn-stalks, cultivated for this purpose, after the crop of grass has been gathered. Why is this done? Has any one made certain the fact, by experiment, that this kind of feed does actually increase the quantity of milk, to any considerable extent? The experience of some of the committee, in distributing several tons of this kind of fodder to a drove of thirty or forty cows, *daily*, for several successive years, during the season of its production, has left great doubts of its value; especially, in increasing the quantity of milk. This crop is abundant, and very easily grown. It is

readily and greedily devoured by the animal. It may be used advantageously to save the pastures from being too closely fed. But, if the produce of the animals is not essentially increased by the feed, then the labor of growing, gathering, and distributing, is, in a great measure, lost. We will not presume to speak positively, for we have not made those careful observations necessary to warrant this; but, so far as we have observed, in superintending one of the largest milk farms in the vicinity of Salem, (the Pickman farm, so called,) our impressions are, that much less benefit is derived from this kind of feed, than is usually ascribed to it. Some benefit may accrue from the cultivation of corn in this manner, by the aid it affords in pulverizing the soil, and better fitting it for the crop the ensuing season; especially, if a dressing of manure is applied at the time of planting, and well harrowed in. Vigilant attention will thus enable the tenant of a few acres to realize two crops, where but one, ordinarily, grows.

In expressing a query, as to the expediency of cultivating Indian corn, to be used *green*, for the soiling or feeding of cattle, it is done more to awaken attention to the subject, than because of confidence in our present impressions. We are aware of the recommendations that have been given to this crop, in our own publications, and by those whose opinions we regard as of the highest authority. To be consistent, therefore, it is proper to advert to these, until the question shall be definitely settled by well-conducted experiments. In remarks upon premiums offered for soiling, in 1823, Col. Pickering observes, that "Indian corn will be well grown for soiling by the middle of July, and will continue green, and in full sap, until the last of August. In order to continue a supply of this rich green food, to which, probably, no other vegetable of our country is equal, especially for milch cows, pieces of land may be planted in succession, so that some may be in full sap to the last of September." The same distinguished practical observer remarks, in the last communication he made to the society, September 25, 1828:—

"The great value of Indian corn-stalks, in their green state, for feeding cattle, milch cows especially, I have before mentioned," alluding, unquestionably, to the quotation before made.

"That which is planted early, for this use, will be ready for cutting just when, in our common summers, the pastures begin to fail. To have this fodder, through the season, in its green and most juicy state, it should be planted at different times; so that the latest planted should attain its proper growth by the middle of September, and continue till the frosts appear, usually about the first of October." The observations of Mr. Ware and others, who have cultivated and used this vegetable to such an extent, for several years, is the basis on which our queries, as to its superior value, are founded. We consider this one of the most interesting subjects, for further experiments, now open to cultivators; and hope, by the remarks we have made, to awaken attention to the same. Nothing can be lost by such experiments; they bring with them their own reward. The products are sure to yield a liberal indemnity, for all investments, either of labor, or of dressing with manure.

Carrots and *beets* are cultivated to some extent, to help out the feed of our animals. Is there any one of our farmers who can answer, with confidence, which of these is most worthy of cultivation? Satisfactory experiments to determine this would be of great value. We have used them both, to some extent, and will state such impressions as have arisen from this use. We have found the *sugar beet* one of the very best vegetables for the production of milk; far superior to the *carrot*—which is thought by some to be the very best of feed for milch cows. We have found the carrot better for fattening, than for increasing the milk of animals. We speak of the sugar beet, in preference to the blood beet, because it grows more abundantly. There are other considerations to be taken into view, in determining which of these vegetables is most worthy of cultivation, as well as the effect on the animals fed by them. We have found the carrot to yield the most, and to leave the land in the best condition, especially for the succeeding crop. Almost all other crops will grow well after the carrot; few will grow well after the beet. The carrot will grow well successively, year after year; the beet will not. The carrot requires less manure than the beet. What kind of crop, therefore, it will be most judicious to plant, will depend upon the combined consid-

eration of the quality of the article grown; the labor and expense of growing; and the contemplated future use of the land. In our remarks upon the comparative cultivation of the beet and carrot, we do not intend to speak with that confidence, which should be a rule for others; all we intend is, to induce others, if possible, to make such observations, as will relieve them from the uncertainty under which we labor. So far as our observation has extended, the cultivation of these vegetables has been diminishing, as a food for animals, of late. But, whether this is because of the labor incident to the cultivation, or, because the animals can otherwise be more advantageously fed, we are unable to say. Did the growers of these plants rightly understand their own interests, they would find, that, while they are gathering up facts to enable them, successfully, to sustain a claim for the premiums offered, they are acquiring that kind of information which will enable them, ever afterwards, to proceed in their cultivation with confidence.

Ruta бага, *English turnips*, *parsnips*, and *potatoes* have each been cultivated as food for animals; and each had their admirers and advocates, especially the potato. We remember when it was thought the potato would supersede the use of most other crops; that it was the very best of feed for fattening and milking purposes. But the glory of the potato has departed, at least until the nature of the malady that now affects it can be discovered; it being difficult to secure enough for the use of man,—not to speak of beasts. We have heard extravagant encomiums on the turnip, particularly the *ruta бага*; and seen crops, beautiful and abundant. When it was first introduced, it was cried up as the one thing needful to the farmer. Is there any one ready to endorse this opinion, at this time?

Of the *parsnip*, as a food for animals, we can only speak theoretically, not having known this vegetable to have been cultivated or used for this purpose, to any considerable extent. Why it has not been, we are unable to determine. Judging from its growth, as a garden vegetable, it may be grown with equal ease and abundance, as the beet or carrot; and we should presume its nutritive qualities were not inferior to either of these. We speak of it, not to recommend it any farther, than as a fair subject for experiment.

A review of the opinions that have prevailed, in relation to the cultivation of vegetables for the use of animals, should make us cautious in our preference, and more discriminating and observing of all the circumstances, that may have a bearing upon the result. This is the kind of information sought to be elicited by the premiums offered. For this reason, do we make these commentaries, in the hope of drawing out this information. We feel that it is what the farmer ought to know, and what it is in his power to know, if he will but take the requisite pains to acquire the knowledge.

Indian corn has long been a cherished and valued crop in New England. No other crop has, as yet, been found, that will, in all respects, fill its place. Others, yielding a more bountiful harvest to the acre, can be named; but where is the farmer, relying on his own experience, who wants to have his oxen in good condition for the butcher's stall in the spring, who would be willing to trust them without the use of a portion of Indian meal? or, where is the farmer who has not found a few quarts of Indian meal to be beneficially distributed to his cows, about the time of their lying in? These are notions we acquired when young, among old school farmers; and, although we have never gone into a nice calculation of the economy of growing Indian corn, we believe it will be a long time before Yankee farmers will be persuaded to abandon its cultivation. Certainly not, while children love *Johnny cakes* as we used to love them. Our impressions are, that a mixture of feed is preferable to any one kind exclusively. English hay should be the basis, and Indian corn the first accompaniment. All the vegetables named may be advantageously used when combined with Indian meal. No stock can be fed, in the most successful manner, without a fair portion of this indispensable ingredient. It is to the animal, what steam power is to the traveller, the most certain means of going ahead.

Some farmers are of the opinion, that the fodder procured from the corn field will nearly pay for the labor of growing and gathering the crop. If this be so, and an average of *fifty bushels* to the acre can be secured by fair manuring of the land, the farmer, who cultivates ten acres of corn, will find it a very pretty appendage to his crops, at the close of the harvest.

Whatever may be the kind of food used for the feeding of cattle, of this we feel confident, that it should not be sparingly used. Feed full, or not at all, is our motto. It is the worst possible economy to scrimp the feed of cattle, or to attempt to impose upon them a kind of food of ordinary or mean quality. How much time is annually wasted in gathering in the coarser grasses from the meadows, and forcing them down the gullets of animals, when their knees have hardly strength sufficient to support their emaciated bodies! If such kind of feed is to be used at all, it should be chopped and mixed with something nutritive, so that the animal may strengthen and thrive thereby. He that withholds from his beasts any portion of a full and generous feed, whatever may be the use he contemplates to make of them, in the same proportion diminishes his own income.

J. W. PROCTOR,
H. WARE, Jr.,
JOSEPH HOW,
Committee.

GRAIN CROPS.

Only one entry has been made for raising grain, and that by John Hathaway, of Danvers, for a crop of winter rye, of an extraordinary yield. Mr. Hathaway's statement is very full, as to his manner of manuring, preparing, and cultivating his lands for the previous crops, and also for the present crop of winter rye. It will be seen that he has raised, on one and a quarter acre of land, 55 bushels, equal to 44 bushels to the acre. This is the largest crop of rye, to the acre, that has come within the knowledge of the committee.

As Mr. Hathaway has spared no pains in preparing his land for a good crop, the committee are happy to find that he has been amply paid for his labor, by reaping an abundant harvest, and recommend the premium of eight dollars to be paid to him for his crop of winter rye.

His crop of summer rye is also a very large yield, 45 bushels

on one and a half acres of land, which would entitle him to a premium. As, however, but one premium is offered by the society, they cannot recommend any for this crop.

The committee would recommend, that farmers give more attention to the raising of this grain; it not only gives a large yield of grain, but the straw is valuable, generally about 100 lbs. to one bushel of rye, and will always command a high price and ready market. Another advantage is, that, being sown in the autumn, after other crops are taken from the land, grass seed may be sown at the same time, and it is the opinion of the committee, that it is the best grain with which to lay down land to grass.

JAMES STEVENS, *Chairman.*

John Hathaway's Statement.

I present, for your consideration, a crop of winter rye, raised on the town farm, in Danvers, on a field containing about one and a quarter acres of land. This land is a light loam, some part of it gravelly. In 1845, the field yielded one small load of hay. In 1846, it was ploughed, planted with corn, and yielded a good crop, say from 50 to 60 bushels to the acre. The manure used was such as is made in our hog-pen, from meadow mud, and slaughter-house offal. We put a full shovel-full to the hill. In 1847, we spread about five cords of like manure upon the land, and planted the lot with potatoes. We used four oxen and a large plough, and ploughed at least eight inches deep. The crop of potatoes was large, and of very good quality. Before the 20th of September, we dug them. We then ploughed with four oxen, as before, harrowed it, then sowed 1½ bushels of rye, and harrowed it in. This was done on the 25th of September. The crop advanced through the season in a most promising manner, and was harvested about the middle of July, in the best possible condition. We obtained from this field 55 bushels of sound grain. We also raised, on another lot, of one and a half acres, forty-five bushels of spring rye.

It will be remembered, that the soil of this farm is of ordinary quality, compared with the soil on most other farms in town. The improvements on it have been chiefly owing to the increase and application of manure.

DANVERS, *August* 31, 1848.

ROOT CROPS.

The society offered \$36, in the aggregate, for the "best conducted experiment" in raising the following roots, viz. :—Sugar beets, carrots, parsnips, ruta бага, mangel wurtzel, and onions. No entries were made on any of the above roots, except onions.

There were two entries for the premium on onions; one by Aaron C. Proctor, of Danvers, who raised 480 bushels to the acre, which was not much above the ordinary yield.

The other entry was by John Peaslee, also of Danvers. It appears, by his certificate, that he raised, on one half acre, 411 bushels, being at the rate of 822 bushels per acre, which, the committee considered, a yield entirely unparalleled in the history of the onion crop.

The committee recommend, that the society's premium of six dollars be awarded to John Peaslee, for his successful cultivation of onions.

They regret that there was no entry of claims on the other roots, for which premiums were offered, as each of them is of the greatest importance to every farmer for feeding his stock.

JOHN STONE, JR., *Chairman.*

John Peaslee's Statement.

I offer for premium a crop of onions, raised from one half acre of land, measuring four hundred and eleven bushels. Land worth two hundred dollars per acre ; yellow loam, southern descent. A crop of onions was taken from the land the year pre-

vicious; not so good, however, as those of the present year. The manure used was well-rotted stable manure, which cost four dollars per cord. The land was ploughed to a depth sufficient to bury the dressing. About the middle of April, of the present year, the land was manured, ploughed, and prepared as usual, and one pound and a half of seed sown. The usual method of hoeing with a machine, and weeding by hand, was pursued. The crop was harvested about the last of the month of September, and carefully measured in a bushel basket. Annexed is a statement of the expenses of the crop, as nearly as can be ascertained :—

Statement of Expenses.

Three cords of manure, at \$4 per cord, . . .	\$12 00
One and a half pounds of seed, at \$2 per lb., . . .	3 00
Remaining expenses,	10 00
	<hr/>
Whole amount,	\$25 00

DANVERS, November 15th, 1848.

Aaron C. Proctor's Statement.

Having called your attention, the last year, to my cultivation of *onions*, and stated the facts in relation thereto, as they had then come to my knowledge, I now submit the following as my experience the present season :—I continued the cultivation on the same ground. I used similar manures, in all, about six cords to an acre, ploughed and harrowed thoroughly; cleared away all refuse material; and sowed the seed as early in the spring as the land could be prepared. I was particular to keep down the weeds. I found the plants thinner than I intended they should be, and was apprehensive that the crop would fall short, on this account. The season has not been favorable for the growth of this plant, though mine continued to flourish and grow longer than many other lots that I noticed. Perhaps this was owing to their being thin. They obtained a good size, and were of as fair quality as I ever raised. I obtained from one

acre of the ground, four hundred and eighty bushels, as measured and delivered in the market. The value, at the time I sold them, was \$1 33 a barrel; they have since commanded a higher price.

One fact I noticed this and the last year, where my onions grew, may be worthy of remark, as illustrating the effects of *sub-soil ploughing*. Three years since, about half of the plane land, where the onions grew, was subsoiled eight inches below the ordinary ploughing; the other half was not. In all other respects, the land was manured and treated alike. The crop was decidedly better on the part that was subsoiled, than on the part that was not. I am not able to state, with precision, how much better, but should judge it to be from *fifteen to twenty per cent*. At the time I used the subsoil plough, it was the better to prepare the land for a crop of carrots, without any expectation of a beneficial influence upon the onions. I state the facts as observed, and presume the improved crop was the consequence of the subsoil ploughing. I have not used a plough of this description sufficiently, to speak with confidence of its general utility; but, from what I have witnessed, cannot doubt it may be used on some kinds of soil to great advantage.

One other fact I observed on my field of onions, which may be worth mentioning. When I procured the muscle-bed, a part of it I spread directly upon the land, and a part I distributed in heaps, and, after it laid through the winter, caused it to be spread. Where these heaps laid, could be distinctly seen through the season, and the crop was much less than around them. Possibly, too much salt had mingled with the soil: whatever may have been the cause, the effect was prejudicial. The extraordinary crop of onions, the last year, induced many to engage in the cultivation the present. Many fields have fallen short of expectation nearly one half. My own has done well; though, had the season been a favorable one, I cannot doubt that the crop would have been one quarter part more. The demand for the onion has, thus far, been commensurate with the supply; and I see no reason to hesitate, in the belief, that it will continue to be one of the most advantageous crops that can be cultivated.

DANVERS, *October*, 1848.

FOREST TREES.

The Committee on Forest Trees regret that no competitors have appeared to claim the premium offered by the society. Notwithstanding the liberal action of the State in relation to this subject, the publication of Mr. Emerson's report, and of numerous essays, of late, upon the importance and profit of forest planting, there does not appear to be any newly awakened action among the farmers of Massachusetts. The acorns still fall unheeded from the few oaks which remain, the pine cones still open themselves upon their boughs, the wind blowing them where it listeth, the cattle are still allowed to gain a scanty and hard subsistence, by grazing over lands that nature plants, but plants in vain. Shall this continue? In the hope, though almost a forlorn one, of arousing attention among the farmers of Essex, upon this interesting matter, we propose to say a few words about planting trees, or, more properly speaking, making timber plantations from the seed.

We have not the space allowed us to enable us to descant upon the pleasurable satisfaction to be taken in seeing one's trees growing from year to year, adding new beauty to our estate; nor to enlarge upon the inward content that fills the breast, as we behold woods, of our own planting, springing up around us, for which those who succeed us will bless our memories, and which may afford the most pure and unalloyed enjoyment to generations yet unborn. We shall confine ourselves to the subject, as a mere matter of thrift, and we shall speak of a tree only in the light which the Laird of Dumbiedikes viewed it:—"Jock, when ye hae naething else to do, ye may be aye sticking in a tree; it will be growing, Jock, when ye're sleeping." Before proceeding, however, more minutely with those considerations, which we hope will induce some few to attempt forest planting, we wish to notice, and, if possible, to overcome the objection that is always foremost, when we press tree-planting upon the notice of our friends and neighbors. It is an objection more deeply felt than expressed, because we are hardly willing to have so selfish a hindrance appear in all its strength,

and it is this:—We are told, that it is a species of improvement from which we, ourselves, cannot hope to reap the benefit, since our lives are too short to witness the maturity of trees of our own planting. This is a weak and selfish objection, at the best, and it is false, too, in its premises. The first Duke, John of Athol, for example, saw a British frigate, built entirely of Larch of his own planting. It will be seen, moreover, if we will examine a little into the subject, that the benefits commence at once, in the increased value given to the land planted. In another point of view, as a provision for our children, how important planting becomes. There is no surer way of making a provision for one's children, than by planting timber trees. The advantage of restoring portions of our worn-out lands to wood, are also most important to New England welfare. We are, every year, developing more highly the mechanical arts, and, in their progress, wood, in various forms, and for numerous purposes, is required. Our lands have been already stripped of the most valuable kinds, for these purposes, and no measures are being taken for a new supply. They have been pastured upon, and exposed to our cold and piercing winds, until, in many cases, the power of vegetation is nearly lost. Now, who cannot foresee a prospect for an increased demand and value for every species of wood that grows? Do we not perceive this enhancement from year to year?

With these premises, we now propose to urge upon every farmer in the county, to take any worn-out field, huckleberry pasture, or other waste land, and to convert it into a wood plantation, whether of birch, larch, pines, oak, ash, or maple, or all combined. And we will endeavor to give a fair statement of the transaction, valuing his own time and attention at the highest market price for farm labor.

In the first place, it must be observed, that, in the estimates of the cost, we assume the work to be well done, for, unless it be so, it had better not be attempted. Merely putting an acorn in the ground, or any number of acorns, is not forest planting. They will germinate, undoubtedly, but they will remain of no value after they have come up, for many years, unless something more is done. It would be as unwise to plant a field of

acorns, without preparing that field, as to sow corn or potatoes without ploughing, manuring, and after cultivating the ground. We shall, in another place, speak more particularly of this; we speak of it now, lest our estimates should appear high. So, in calculating the value of the product, we assume a rapid production, such as care and cultivation alone will give, and not such as springs up from unassisted nature. We will now suppose, that a farmer has a ten acre lot upon his farm, which has run to waste, or for which he has no profitable use. We offer, to his consideration, as the most productive employment of this lot, its conversion to a wood lot; and, as an inducement for him to attempt it, we state to him the cost of an oak plantation, and its profit and loss for forty years, as follows:—

Cost of planting, including ploughing, harrowing, manuring, and keeping fence or wall in order, at \$25 per acre,	\$250 00
Thinning, pruning, and weeding, for ten years, at \$3 per acre, annually,	300 00
Interest for ten years, assuming the land to be worth \$15 per acre.	270 00
Whole cost, at the end of ten years,	820 00
For the next ten years, the thinnings will fully pay for the cutting and other slight attention. We will, therefore, add to the above, at the end of the second ten years, interest upon interest, &c., &c.,	492 00
	<hr/>
	\$1312 00
At the end of twenty years, if the labor which has been charged for, has been faithfully performed, there will remain, say, 1000 trees to an acre, of the average height of 30 feet, worth, at least, 30 cents each, or \$300 per acre,	\$3000 00
Deduct the cost, up to the expiration of this period,	1312 00
	<hr/>
And there remains a profit of	\$1688 00
after paying interest and expenses.	

For the next twenty years, the cost of thinning, which is the only expense, will be more than balanced by the increase in value of the wood cut, at 30 cents per tree, over that valuation. During that time, the trees will have been thinned to about 400 trees per acre, which is about the number of timber trees that can be grown to full size. These trees would be worth, for fuel, merely, as they stand, at least \$5 per tree, any where in Essex county, or \$2000 per acre. The account, then, would stand, at the end of forty years, thus:—

Profit, at the end of 20 years,	\$1,688 00
400 trees per acre at the end of 40 years, at \$5 per tree,	20,000 00
	<hr/>
	\$21,688 00
Less, previous value given on same, at 30 cents per tree, remaining,	1,200 00
	<hr/>
	\$20,488 00

Which sum, large as it may appear, shows the smallest profit to be anticipated from an oak plantation of ten acres, upon suitable land, of a medium quality, at the expiration of forty years from the time of planting.

On a poor dry rocky soil, the Scotch larch would offer as marked a profit. Its wood is almost indestructible, and the rapidity of its growth is astonishing. Though similar to the American larch, or hackmatack, in appearance, it is totally opposite in habit, the latter flourishing only in wet humid soils, and the former in soils of a dry and gravelly nature. The seed can be imported through Messrs. Hovey & Co., of Boston, or seedling plants can be obtained, at a very low cost, say from one to three dollars per thousand, according to size.

We shall now conclude our remarks with a few directions for preparing the land, and making the plantation, taking an oak plantation for an example. The first step is to prepare the ground, by ploughing and harrowing it, as it should be done for

corn or potatoes. A light dressing of manure, ashes, or lime, should be laid on, and ploughed or harrowed into the soil. This being done, the land is ready to receive the seed, which may be sown as soon as gathered from the trees, or kept in dry sand until spring, if the field is likely to be infested with mice or squirrels. To allow for this, and failures in seed, we recommend planting five or six acorns in a circular form, just as one would plant corn or potatoes in hills, making the diameter of the circle at least one foot—the spaces or hills being three or four feet apart; and the work is done, for the present, so far as the future oaks are concerned. It seems to be generally conceded, however, that oaks do better, if sheltered by other small trees, set out or sown before the acorns are planted. In England, the Scotch fir, resembling our pitch pine, and the Scotch larch, are used. We do not attach quite so much importance to this auxiliary planting, as seems to be given to it in England, though it is of advantage, without doubt, as sheltering the young plants. We think the planter will find great advantage in sowing broadcast the birch seed, at the rate of two quarts to the acre, after ploughing, and before harrowing, as it is a quick grower, readily removed, and of value when it becomes necessary to make severe thinnings—and we are satisfied that this is sufficient. If the planter wishes to make a mixed plantation of oaks, pines, birch, ash, and maple, he can sow them all broadcast, and harrow them in, except the acorn, which, if it is to remain as the principal crop, had better be planted as before directed. We have thus given, in a cursory manner, the most proper mode, in our opinion, to secure a profitable return to the forest planter. We have adopted, out of many plans that planters follow, the one, which, upon the whole, seems best adapted to us, and it has this advantage, if the assertion, by some writers, be true, that a transplanted tree makes less valuable timber, than the trees start up, grow, and mature, without transplanting. It may be, however, that a farmer cannot, in any one or two seasons, get his field ready for planting, and, at the same time, he is unwilling to lose the intervening time, entirely. In such a case, he has only to sow his acorns in a small bed of good soil in the autumn, and allow them to remain there

for one or two years, when he can place them in their future resting-place. In doing so, he can sow them as thickly as he would peas, in quadruple rows, a foot or so apart, and an inch deep.

And here, it may be well to remark, that great care should be used in selecting, not only the acorns of valuable species of oaks, but, also, from large and vigorous trees. The care used, in this respect, will amply repay the trouble. Of the species of oaks to be recommended, of course the white oak stands first, and, in good soils, it grows rapidly. We wish, however, without excluding any but the red oak, which is useless as a timber tree, to call the attention of our farmers to the chesnut and rock chesnut oak, the latter of which grows upon the poorer soils. We think these oaks have not received the attention they deserve, both for their beauty, as well as for their value as timber. They resemble, more than any of our oaks, the best English oak, and we predict that the time will come, when they will stand, side by side, at least in reputation, with the white oak.

In the estimate, which we have given of the result of an oak plantation, we are aware that the profit seems too large to comport with our common experience of the value of land covered with wood. But it must be borne in mind, that the land of this nature, which we are in the habit of valuing, is of the natural growth, and most frequently the growth from the stump of a previous forest. We must also recollect that the wood lands which we are accustomed to look upon, have never received care and attention, more especially in thinning at proper intervals. To cultivate a wood plantation successfully requires the same degree of care and attention in thinning out, as an onion, carrot, or beet bed. If the trees are left to struggle with each other, for the mastery, the vanquished will die, while the victors will suffer severely from the effects of the struggle. The object to be attained by thinning, is so to regulate the distance of the plants, that they will not interfere with each other's growth; and, for this purpose, it is necessary that each plant has sufficient space of ground and air for the spread of its roots and branches, proportionate to its size at any given stage of its

growth. To accomplish this properly requires constant attention. It is highly injurious to thin so much, at one time, as to leave the trees remaining exposed to a greatly increased degree of heat and cold, as Mr. J. Brown remarks, it is like suddenly removing the plantation a few degrees farther north or south. So it is equally injudicious to allow the plants to become crowded and interlaced, as thereby they exclude too much light and air, and serve to weaken each other. In rearing a plantation for timber, the approved rule for hard wood trees is, to have a space between each tree equal to half its height; and, for resinous trees, a space equal to one third the height; and this should be kept in view from the moment that thinnings commence. The period when these thinnings should begin, must depend upon the forwardness of the trees. If acorns are planted in circles, such as we have recommended, they can remain so for two or three years; the weaker ones can then be carefully drawn out, so as not to disturb those that are to remain, until the plants shall stand three or four feet apart. In the course of seven or eight years, the remaining plants should have attained the height of ten or twelve feet, when the first moderate thinning should take place, and, ever after, the rule we have laid down should be carefully followed.

We have thus, in as brief manner as in our power, presented our views upon the important, though neglected subject of arboriculture, endeavoring to give them in a practical form, so far as they have gone. We should like to go farther, and to do all in our power to dispel the common illusion, that it takes more than one life-time to grow a tree. We can, however, do no more than to present the following table of the actual, as well as comparative growth of a variety of trees from the time of planting, until they had made twenty years' growth. The plantation covered six acres in extent, consisting, principally, of a swampy meadow, upon a gravelly soil:—

		Average feet in height.		Average circumference. feet. inch.	
Lombardy Poplar,	-	60 to 80	-	4	8
Abele,	-	50 to 70	-	4	6
Plane,	-	50 to 60	-	3	6

			Average feet in height.			Average circumference. feet. inch.
Acacia,	-	-	50 to 60	-	-	2 4
Elm,	-	-	40 to 60	-	-	3 6
Chesnut,	-	-	30 to 50	-	-	2 9
White Pine,	-	-	30 to 50	-	-	2 5
Spruce,	-	-	30 to 50	-	-	2 2
Larch,	-	-	50 to 60	-	-	3 10

No account is here given of the oak, but Loudon, and other writers, give the average of its growth, upon a medium soil, as from 30 to 50 feet, in the same period. The above table is an account of English growth, but it corresponds, perfectly, with the results of our own observation and experience in Massachusetts. We have quoted this table as an incentive to tree planting. Even if we are indisposed to recreate the forests which have been wasted, we may, some of us, be induced to adorn the road-sides, near our dwellings, with trees. As they grow in size, from year to year, they creep into our hearts' best affections. Our associations become connected with them; our children grow up with them, and learn to love them, and our children's children may enjoy their shade, and gambol beneath them. Indeed, as compared with the life of man, the tree which he plants soon assumes a superiority over him. From his tender nursing, it springs into existence, and becomes his shelter and his protection, and will continue to shelter succeeding generations long after he is gone and forgotten. The tree, under which Washington stood, when he first drew his sword to take command of the army, at Cambridge, is still vigorous and flourishing as ever, while all of that gallant band of patriots have passed away.

RICHARD S. FAY, *Chairman.*

AN ESSAY ON DESTROYING WEEDS.

BY ANDREW NICHOLS.

The best and most economical means of destroying weeds, shrubs, bushes, briars, and all the tribe of plants out of place,

which voluntarily seize on our cultivated and uncultivated lands, stealing the fertilizing properties of the soil and manures, —greatly adding to the toils of the farmer, or lessening the products of his labor and his lands,—is a subject of the highest interest to all interested in improvements of agriculture, and who is not ?

Weeds are either

Annual, springing from seeds or bulbs, and existing one season only.

Biennial, produced from seed, requiring two years to perfect them, and dying the second year.

Perennial, the root living an indefinite number of years, while the top dies annually.

And *Shrubby*, where both root and top, at least some part of the growth above ground, lives through the winters of several years.

In order to ascertain the best means of destroying each, the natural history of each, not only of each class, but of each individual species, must be carefully studied. The seed of some of them, it is well known, will lie dormant in the ground for years, till it is stirred for cultivation. Others never trouble us in tillage operations, but prove injurious in grazing and grass lands alone. The most common annuals that infect our tillage grounds, such as Roman Wormwood, pigweed, charlock, &c., can be subdued only by the most thorough weeding of the grounds tilled, for a series of years, in no one of which must these plants be allowed to ripen seed on the premises. To young farmers, who till their own acres, we would say, declare a war of utter extermination against the whole race of annual weeds. And, although the extra labor may not be fully repaid by the increased crops of a few of the first years, you will be great gainers in the end, if you spend your lives, or many years, on the same homestead. Biennials must be treated in nearly the same manner.

Perennials, such as spread by their roots, as well as by seed, require a somewhat different treatment. One of the most troublesome of these, the one most difficult to exterminate, is the dog-grass, or witch-grass, (*Triticum-repens.*) Ploughing

late in the fall, and exposing the roots to frost as much as possible, shading the grounds well by planting corn, or other crops, very thick, and frequent hoeings, so as to deprive the plants of the benefit of light and air, will do much towards destroying this *tillage evil*. A resolute farmer, who gives no quarter to his enemies, will soon destroy this under-ground creeping foe.

The Canada thistle, and the slipper, as it is sometimes called, toad-flax, (*Antirrhinum Linaria*,) must never be allowed to go to seed, or enjoy the light of the sun. Either head them, as soon as they peep out of the ground, or cover them with litter, cheap hay, or other rubbish. Roots cannot live long in summer, unless their tops find light and air. For perennials, injurious to pasture lands, and grass crops in mowing lands, such as white weed, butter cups, fleabane, (*Erigeron Philadelphicum*,) Ribwort, (*Plantago Lanceolata*,) &c., occasionally tilling the lands, and high manuring, seem to be the best remedies.

Of the Perennials, approaching shrubs so nearly as to make the definition of shrub applicable to them, yet so unlike shrubs as to be readily mistaken for plants that die down to the ground annually, the most troublesome in the southern part of the county, in and about Salem, Lynn, and Danvers, especially, is the woodwaxen, (*Genista Tinctoria*.) This plant greatly enriches the soil, although it allows nothing else to grow thereon; and, where it gets possession of land that can be ploughed easily, it does not diminish its value. But it is the ruin of rocky pastures. The woodwaxen is a tap-rooted plant, giving out shoots only from its crown. Cut off this crown with a hoe, or otherwise, an inch or two below the surface of the earth, and the root perishes. It produces abundance of seed, but it does not seem to remain long in the ground, like some other seeds, in a dormant, but living state, capable of vegetating under favorable influences. Hence, ground, once thoroughly cleared of it, is very easily kept clear of its occupancy. It may, also, be easily smothered, by covering it, in the summer season, for a few weeks, with hay, or any thing, that will keep from it light and air. About three tons of meadow hay, for example, will, from experiment, made by myself, be sufficient to kill an acre of woodwaxen. The hay may be taken off after a few weeks, and

used for litter, with but little diminution of its value. I should recommend this as the most economical method of destroying it in rocky lands that cannot be ploughed. The usual practice of burning it in the fall, winter, or spring, does no good, and should be discontinued. Burning it in a dry and hot day, in summer, when it is in bloom, will kill the greater part of it. But this cannot be done, where it has been burned in the spring, or fall previous. There is a wild kind of clover, zigzag clover, (*trifolium medium*,) which grows in this vicinity, which will overpower and root out the woodwaxen. This fact can be verified by spots of ground in Danvers, where these two tap-rooted plants have, sown by Nature, contended for the mastery, and where the clover is victorious. This, however, is where grazing animals have had no access. In pastures, where cattle are allowed to feed, the clover would, probably, be eaten and subdued. I have never known this clover sown for this purpose. With a little labor, the seed might be obtained, and the fact stated, is, I think, well worthy the attention of those who have woodwaxen to destroy. Another means of destroying this troublesome plant is pasturing sheep upon it. To do this effectually, the pasture must be overstocked, and the sheep be kept hungry. They will then eat up and destroy every spear of it, and, if properly managed, kept alive, and ready to be fattened on better forage.

Another shrub, or vine, far more difficult to subdue, and equally ruinous to pasture lands, is the blackberry vine. This cannot be destroyed by ordinary tillage. On one of my paternal acres, I have noticed, the present year, blackberry vines growing on a spot where I have known them to be for more than fifty years, notwithstanding the field has been alternately under culture, or in grass, during the whole of that period. Every piece of root left in the ground, and they run far below the reach of the plough, will send up shoots to the surface, which, if allowed to run themselves there, will live on indefinitely. The plan of smothering this plant, I have never seen tried, but can have no doubt it would prove effectual, if continued a sufficient length of time. From its greater tenacity of life, longer time, and a more careful watching and covering, it

would probably be necessary than for some other plants. Sheep will destroy it, if pastured thereon, in the same manner they do woodwaxen.

The keeping of sheep, for the purpose, in part, of keeping pastures free from blackberry vine, and other bushes, weeds, &c., is not attentively enough considered by the farmers of this county. Asa T. Newhall, Esq., remarks, that "as many sheep as horned cattle may be kept in the same pastures, and both will thrive equally as well as they would, were one kind of stock only kept therein, and the increase of briars and other bushes at the same time prevented." Pastures, in which *Lamb-kill* (*Kalmia*,) grows, ought, perhaps, to be excepted. Sheep, also, will destroy all seedling pines and other young forest trees, and, of course, wherever it is desirable to convert pasture lands into woodlands, they should not be kept therein. But wherever clean unshaded grazing lands are coveted, keep sheep in the same pastures with horses and horned cattle. But fences are not generally sufficient for this purpose, it may be said. Yankees are seldom at loss for expedients. Might not the sheep be so cosseted with cows, that they would not leave them? And, in many cases, improving the fences so as to make them sheep-proof, would be good husbandry. And if the worst method must be resorted to, fetter them, rather than not keep them at all.

Huckleberry bushes, lamb-kill, (*Kalmia Angustifolia*,) bayberry, and other small shrubs, which so frequently get possession of the most fertile, but rocky portions of pasture lands, cannot be economically destroyed, outright, unless they also can be smothered. To kill these bushes, and, at the same time, make these rocky places productive and valuable, the best method is to plant them thickly with trees. The locust, willow, and white birch, and larch, would, in a few years, amply compensate the owner for the rent of the land, and outlay upon it, by its increased value. The locust and birch are best on dry lands—the willow and larch for springy and low ravines. Other forest trees, such as the red maple, swamp white oak, and black birch, would do well, mixed with trees of a more rapid growth and earlier maturity. Whenever the trees become sufficiently large, and

dense, to exclude the direct rays of the sun, the under brush will die out.

Some patches of most valuable soil in this county are suffered to remain overrun with the sweet flag, (*Acouis Calamus.*) This plant, although the root is of some value as a medicine, is, usually, worthless to the farmer. It is, therefore, an object of some importance, to destroy it. This will be most easily accomplished, by mowing it in the month of July, leaving the usually abundant crop on the ground, to which should be added coarse meadow hay, or other suitable article, in sufficient quantity to completely smother it, care being taken to cut down every spear that penetrates through the covering.

The ferns, where they cannot be subdued by the plough, should be treated in the same manner, although, to do this, would be difficult in some cases, on account of the unevenness of the ground on which they grow. The tall fern (*Osmunda Cinnamomea,*) grows in bunches, the roots of which, compactly woven together, elevate the soil into hills, like the old-fashioned hills made around Indian corn, leaving deep holes and channels between them. To cover this plant, therefore, deep enough to smother it, would require many tons of hay to the acre. Whoever contemplates the destroying of useless shrubs and other plants on his lands, must study for himself the peculiarities of their natures, location, and all the accompanying circumstances, of the kind of land, its value when redeemed, and the cheapest method of effecting the object. Over and above the pecuniary recompense, always worthy of consideration, there is often a noble pride, an exalted ambition, more worthy the admiration of the world, than that which inspires the conqueror of nations, which prompts the proprietor to wage a war of extermination on these vegetable invaders of his territories. The indulgence of this ambition, wherever pecuniary means will justify it, often as effectually weeds out of the mind, low thoughts, and groveling desires, as out of fields and pastures, the worthless intruders which have been the subject of these remarks.

SELECTIONS FROM AN ESSAY ON THE IMPROVEMENT OF WET
MEADOWS AND SWAMP LANDS.

BY TEMPLE CUTLER.

The first great and important point to be attended to, is thorough *draining*; this is the great desideratum,—no one may expect complete success in attempting to reclaim wet, or bog meadows, or swamps, without first sufficiently draining them; and, unless this is practicable, no one should, with confidence, attempt the enterprise. It is on this point many have failed of success. They may, indeed, for one or two years, obtain a tolerable crop, but land, not fully drained, even with all its top-dressings of gravel, of loam, of soil, or of good manure, will soon go back to its natural state, producing little besides its natural wild grasses, and will be entirely unfit for any kind of cultivation. The first great object, then, should be to ascertain if the land in view can be drained; and, according to my observation, there is not, in our county, much land that may not be well drained, if right measures are taken; but the draining of some pieces of meadow is far more expensive than others, and this should be the first item of expense to be taken into the calculation, and, in general, the first operation to be performed.

Much of the land I refer to, which abounds in our county, and many other parts of the State, are runs, or narrow strips of land in vales, where water seems to ooze along, and, by stealth, saturates the ground, and forms a quagmire, which must be drained before any other operations can be performed. If there is a fall sufficient for water to run, no one need hesitate to commence the operation of draining. The soil is generally of a kind of loose peat, to the depth of from two to many feet. If the growth is trees, they are not thrifty, while it remains flowed, or in its quagmire state, and such land is not profitable for a growth of fuel; the trees must be taken off, root and branch, and this is more easily performed on peat ground than some may be aware. The roots of some kinds of trees, and, generally, all kinds on such land, do not run deep, but spread on the surface. Cutting off a few roots, at a distance from the body,

by a stroke or two of the axe, and affixing a rope near the top, to sway them over, one man cutting such roots as seem to hold on, in a few moments a tree may be brought to the ground, with a thin sheet of the top of the soil turned up. The tree may then be easily managed, and freed from most of the soil attached to the roots. Some practise cutting the trees down near the ground, and then removing the stumps by various ingenious expedients, or with machines made for that purpose. But I believe the former the most expeditious and cheapest method, where the soil is suitable for its performance, although laboring men enough may be found, who will clear such grounds of all the stumps and roots, for the fuel they make. When the ground to be reclaimed is covered with bushes and briars, not worth saving for fuel, the ground should be burnt over, and all humps and hassocks smoothed off; and, when the meadow is drained, and in dry weather, piled and burnt to ashes, and the ashes spread on the ground, which is one of the best of top-dressings.

To perform the work of draining, dig a large ditch in the centre, or lowest part of the meadow, beginning at the lower end, where there must be an outlet for the water. This ditch should be about four feet wide at the top, and about two feet at the bottom, dug down to the hard pan, which, in such land, is generally from two to four or five feet deep, and composed of hard sand, often inclining to clay, which is impervious to water. This is the great conductor of all water from the land, or is a reservoir to hold it, where the descent is so small as not to carry it all immediately off. Then cross ditches, made shoal and narrow, tapering to the bottom, about four rods, and sometimes only two rods apart, (where the springs are abundant,) running crossway, to the main ditch. In most instances, and where the cold springs flow in from the upland, marginal ditches (between the meadow and upland,) are required, and absolutely necessary to take off this water, and of more importance than any of the ditches. But where the water from the hill sides comes only on the surface of the ground, it runs over the meadow, and makes an irrigation that enriches it, greatly promoting the growth of the grass. It will often be seen, that, in the shallow cross ditches, where water runs in them from the

upland, forming an irrigation, a thick set grass, called blue grass, grows in abundance, and is an excellent kind. In some instances, deep ditches should be interspersed among the cross ditches to take off the occasional springs; these ditches, if convenient, should be stoned up and covered. These cross ditches form beds, which should be raised in the centre between them, by throwing the mud from the ditches and sides into the middle, or, if ploughed, commence in the centre and back furrow to the sides, which will raise it sufficiently.

If such a meadow as I have described could be ploughed, it would be best so to manage, and to plant it with potatoes or corn, or sow it with rye and grass seed at the same time, or lay it down, sowing grass seed alone, in dry weather, in August, or September, which, I think, better than to sow later, as the crop of grass will be far more abundant the following season; or, it may be sowed late in the fall, and even in the next spring very early, but I think the chance, by the last methods, is, by no means, so favorable. But, before any thing of this is done, a top-dressing of coarse gravel, of the depth of two inches, will be necessary, and will have an astonishing effect. Sand will answer the purpose, and loam is better than mere sand, but gravel better than either. A top-dressing of lime, or ashes, on the gravel or sand, I think may well pay the expense, or a compost with lime still better. Yet the effects of mere gravel, or sand, I think, would astonish any one who has not before experienced the trial of it, producing an abundant crop of grass. The sand, or gravel, seems to correct some acidity incident to such soils, or they supply some principle wanting to them. The precise manner in which these substances act upon the peat soils, and the exact principles each contain, we will not stop now to inquire; let chemists determine these points, but suffice it to say, experience has shown these important results. It is well known, from various experiments, that such lands do, in some instances, continue to produce from two to three tons of good hay to the acre, without additional top-dressing, for six years; there are few instances, I think, of uplands doing this. It is, also, an encouraging circumstance to any who fear (on the score of expense,) to experiment on the improvement of

these meadows and swamp lands, that we have within our knowledge several instances, where the first crop has amply paid the whole expense of the operation of reclaiming.

If I have succeeded in showing the true or supposed value of the kinds of wet meadows and swamps, referred to, it remains for me to attempt to show the best methods of managing them after draining. Some think best to dig over the land, throwing out the stumps, which, it has been found, may be done at an expense of from twenty to thirty dollars per acre. But it is found, in numerous instances, that the stumps, for fuel, will well pay all the expense of throwing them out. If, then, the expense of getting out the stumps is thus cancelled, and the expense of digging over amounts to twenty dollars or more, per acre, it would undoubtedly be much cheaper to plough the ground, when practicable, by attaching a pair of wheels to the plough, to remedy the difficulty of driving the off oxen in the furrow, which would be miry, and thus bringing the oxen on to the swarded and harder part of the meadow. Where all parts of the ground have been found too soft for oxen to travel, some ingenious men have contrived the method of fastening a strong rope to the plough, running to the upland, or hard edge of the meadow, and passing through a running tackle, and driving the oxen at right angles with the furrows. The ground, I find, may be thus ploughed with more expedition, than one at first would suppose: the plough will run, with a roller attached, or even with only a rolling cutter, without going too deep. Undoubtedly, many other expedients, which Yankee ingenuity could suggest, may be adopted. But there are many tracts of such meadow, which are already free from bushes and trees, where there would be no need of inverting the sod. In such cases, after the land is well drained by main, cross and marginal ditches, it may be covered with one inch only, of coarse gravel, which may be hauled on, in the leisure of winter, (when the meadow is also hard with frost,) and spread the following summer, and which will take about 150 loads to the acre, costing, as some have found, about ten dollars. Then may be spread on a light top-dressing of ashes, or compost manure, costing, perhaps, as much more. This land may then be sowed

down to grass, in September, with the usual quantity of seed, used on uplands, viz. : one peck of herds-grass, and one bushel of red-top, costing, probably, \$1 75, making, therefore, the expense of \$21 75. We know of instances of land, thus managed, producing, for several years, more than two tons to the acre, without farther top-dressing. Peat meadow land, thus managed, I have always found to give good crops of good hay much longer with top-dressing, than similar lands well ploughed and planted, well manured in the hole, rotted and laid down, without the sand or gravel. This seems to amount to something like conclusive evidence of the great value of these substances, on peat lands.

I have spoken hitherto, mostly of loose peat lands, for it is with those I have been most conversant. But the field in which we are now engaged is exceedingly extensive, opening to view a great variety of soils, susceptible of great improvements, varying in their texture and composition, and composed much of nutritive and decayed vegetable and animal substances. The process by which they may be reclaimed must be varied, according to the substances composing them. Where clay predominates, sand is one of the best ingredients to mix with it. Where sand or gravel prevails, some substances having the adhesive qualities of clay, would be best. In some soils, that are well drained, and not flowed at any season, compost, and even barn manure, may be used to advantage. But I have come to the conclusion, that, on most swamp lands, or meadows, manures are not necessary, but the cheaper articles I have mentioned, such as gravel, &c., are not only more economical, but actually better. Improvements by *paring* and *burning* the surface, have been attempted in our county, with good success, and although so much resorted to, in foreign countries, yet have not been extensively practised here. Such as have undertaken this process have raised fine crops. Some instances of improvements have been seen, where the expenses have exceeded the value of them, in dollars and cents, yet the fancy of the owner may have been gratified, and the outlay not grudged. Yet I think it would be wise, in those who are to get their living by farming, to exercise their best judgment in this matter, and adopt

such methods as will be likely to insure a profitable return. If they make application of theoretic rules, let them examine carefully the component parts of the soil, on which they propose to act: the depth, and the vegetable materials of which it is composed; the character of the waters, which flow on it, and even the nature of the subsoil. It will not be expected, that any one can, by anticipation, lay down specific general rules, to direct, in all cases, the proper mode of management to be adopted, in reclaiming wet meadows; so numerous are the varying circumstances, on which we must depend. Yet one unvarying rule must be observed. The land must be well drained, and the ditches continued to be kept open and clear. Occasional top-dressings must be applied of such substances as have been found to prove most successful. Thus managed, I would aver, that such lands may be kept in good heart much longer, and produce more abundant crops, at far less expense, than uplands generally.

AN ESSAY ON THE ESTABLISHMENT OF AGRICULTURAL LIBRARIES, BY
AGRICULTURAL SOCIETIES.

BY ALLEN W. DODGE.

Among the measures adopted by agricultural societies, to promote the objects for which they are instituted, it is not a little remarkable, that agricultural libraries should have been so generally overlooked. That they are within the legitimate province of these societies, so that a small portion of their funds might be annually appropriated for their establishment and increase, can hardly be questioned. The only subject for consideration, would seem to be, whether the benefits, to be derived from such libraries, would justify the expenditure.

It may be said, in the first place, in favor of this enterprise, it will disseminate agricultural knowledge. The object of these associations is to advance the cause of agriculture. To this end, premiums are offered, to induce experiments, to ascertain things unknown or doubtful, and to excite greater skill, in the

execution of what is already well understood. The results, as recorded in the transactions of this society, are justly deemed as one of its best features. It is because it thus contributes to the fund of agricultural knowledge, that its labors are so highly appreciated. If so much, then, is done, by this society, in diffusing its own knowledge among others, may it not confer an equal benefit on its own members, by procuring knowledge from abroad, to be circulated at home? There is probably a vast amount of agricultural information, now lost to the reading farmers of the county, for no other reason than that they have not the means to obtain it. Cheap as are books, they cost a large sum in the aggregate, larger than most farmers can afford; and, for this reason, they have often to deny themselves the advantages to be derived from them. If this be true, would not this society, and kindred associations, discharge their high trust, with a wise and liberal forecast, by laying the foundation of a library, to supply, free of cost, this demand for agricultural reading.

Such a library would be useful, because, in the second place, by furnishing the means for reading, it would serve to increase the number of reading men, in the agricultural community. It is now too late a day, when so many agricultural newspapers are taken and read, to urge the importance of having all farmers, especially young farmers, well informed on all subjects, within the sphere of their occupation. The time is fast coming, if it has not already come, when every farmer should be acquainted with something beyond the practical routine of his own cultivation; when, to be an intelligent farmer, he should be able to give a reason for this and that process, by which he obtains different results; to understand processes different from his own, and to be able to compare them with his own; and, indeed, to survey, if not the whole domain of agricultural skill, in this, and in other countries, at least some of the more striking parts of it, and to draw, from such a survey, useful suggestions, for his own practice.

Besides this advantage, the mere exercise of the mental faculties, derived from agricultural reading, is, of itself, almost a sufficient reason in its favor. The farmer should keep his mind,

as well as his plough, bright by use; and how can he use it to more profit, than by reading the thoughts of those who have written well on subjects connected with his own occupation? It furnishes, not merely an innocent, but an intellectual employment, for the long winter evenings, when, if not thus employed, time is too often passed listlessly, and unprofitably. What better guaranty can we have, than such a library affords, that this society shall hereafter be able to enlist, in its ranks, the services of intelligent farmers, to direct its management, and to sustain, by its reports, the fair fame transmitted to it, by a Pickering, a Colman, and other well-read farmers.

In the third place, such a library would give permanency, "a local habitation and a name," to much of the agricultural literature of the day, which, however valuable, soon disappears, and is almost lost beyond recovery. As an instance in point, it may be stated, that the greatest difficulty was recently experienced, in procuring a complete set of this society's transactions, for the purpose of having them bound in volumes, for the use of the society. Such a set is now obtained, but the task would be almost hopeless, to procure another, pamphlet by pamphlet, one from this source, and another from that, without any clue to guide in the search. The volumes of the transactions of other agricultural societies, particularly those of the Massachusetts, and of the New York State societies, are very difficult of access. The *New England Farmer*, enriched, as its pages are, by the copious pens of Fessenden and of Lowell, will, in a few years, be extant only in the libraries of a few reading men. Now, if these and kindred publications, with works of foreign authorship, such as Low's *Practical Agriculture*, and Stephens' *Book of the Farm*, could be placed in such a depository, we should be always sure of their preservation, and we could lay hands upon them, just where and when we wanted. As references, such works are often needed, and it is of no small consequence, to be able to command them.

In the fourth place, such a library would be a public benefit, from the fact that nothing of the kind exists among us. If one wishes to consult books on theology, law, or medicine, or on the natural sciences, there are abundant sources of information on

these subjects. There are libraries in the county devoted to these special subjects. But where are the fountains of knowledge to which the student of agriculture may repair, to quench his thirst? They are not to be found here, and he must content himself with the supply that reaches him, weekly, through the agricultural newspapers, and from the annual flowings of the society's volume of Transactions, including, perhaps, the little rills that percolate through the pages of the Old Farmer's Almanac. Is it not a reproach to farmers, that, as a class, they are not more alive to the importance of supplying this deficiency of the means of information on their own peculiar business? The means—the books—exist, and are to be had; but where are they to be found in any number collected together, and accessible to all?

Much, of late, has been said in speech, and in print, in legislative halls, and agricultural assemblies, of the importance of establishing agricultural schools. The attempts, however, which have been made to found them, have hitherto, in this county, proved abortive, and, to some minds, they appear to be uncalled for, or, at least, of doubtful utility. Without expressing an opinion of their feasibility, if properly organized, or of their usefulness, if rightly conducted, I would ask, if the want, which such schools are intended to supply, a more thorough education in the principles and practice of agriculture, might not, in part, be supplied by agricultural libraries? The young man labors in the field—his mind is inquisitive—give him the proper instructors, whether books or professors, and he will obtain the desired information. Where there is a will, there is a way, and most true is this of an ardent mind in the pursuit of knowledge. To such a mind, open the doors of your library, and you open to it the resources of wisdom and experience, of theory and science, in matters of agriculture, for which, now, it may knock and knock in vain, at the door of any and every other library in the county.

As connected with county agricultural societies, a library will, it is believed, be a new feature, and if the reasons here adduced in favor of it are conclusive, a bright and useful feature. It will be an advance upon what has already been done by these

institutions, in exciting a laudable spirit of enterprise, and high achievement in the cause of agriculture. Complaints are sometimes made—and from high authorities—that agricultural societies have accomplished their mission—that premiums for large crops and fat animals are rewards only for doing that which has, time and again, already been done; and that thus, little progress, in agricultural knowledge and skill, is, in fact, made by means of these societies. The opinion, that agricultural societies have done all the good they can do, even by the continuance of the offer of the old premiums, may be justly questioned, for the reason, that but a small part of our farmers have yet reached the point, when they could be successful competitors for these premiums. In the mean time, why not avail ourselves of other means of progress, simultaneously with the offer of premiums? Why not advance a step beyond the ordinary instrumentalities, by establishing a library of useful works on agriculture? Not only would this be a new vantage-ground gained, but it would open the way for further progress. By enlarging the sources of knowledge, and, as is presumable, knowledge, itself, among the farming community, would it not lead, necessarily and directly, to a higher standard of excellence in agricultural skill, and to earnest and intelligent efforts to attain to it? If, as the poet says,

“To know ourselves diseased, is half the cure;”

so, to learn our deficiencies in agriculture, by careful study, not only of the skill and success of other farmers, but of the processes by which their results was obtained, and the reasons of such processes, would surely teach us the folly of old errors, and the means of correcting them.

Objections may, doubtless, be raised to the establishing of such libraries as are here contemplated. Some of them have been glanced at, and attempted to be answered, in the preceding pages. There are but two others that occur to me as having any great weight. And, first, it may be said, that such libraries, if designed to instruct young farmers, will entirely fail of their object; that agriculture, being a practical art, must be learned by actual practice; and, to learn it well, books can

never be substituted in the place of personal observation and experience. The truth of this latter opinion is fully admitted; but it may well be questioned, whether, as guides in understanding, the various objects and operations of agriculture, books may not afford to beginners the most valuable assistance. "Books on farming," says Stephens, in his *Book of the Farm*, "to be really serviceable to the learner, ought not to constitute the arena on which to study farming—the field being the best place for perceiving the fitness of labor, to the purposes it is designed to attain—but as monitors for indicating the best modes of management, and showing the way of learning those modes most easily. By these, the practice of experienced farmers might be communicated and recommended to beginners. By consulting those which had been purposely written for their guidance, while they, themselves, were carefully observing the operations of the farm, the import of labors—which are often intricate, always protracted over considerable portions of time, and necessarily separated from each other—would be acquired in a shorter time, than if left to be discovered by the sagacity of beginners."

It may, also, be said, in answer to this objection, that those who consult agricultural books, while their minds are plastic, and their habits forming, will be far more likely to improve upon the practice of their fathers, than if they only followed them in their routine of husbandry. It is well known with what facility a young man adopts as the best, the modes of farming that are practised on the homestead, and with what pertinacity he adheres to them in all after life. Hence it is, that farmers, as a class, are so slow, not merely to make innovations, but to adopt real improvements. The fault is, not that they follow the ways of their fathers, but that they follow them blindfold, and with a sort of undeviating exactness, amounting to veneration. To the youth, who is ambitious to attempt nothing beyond what his progenitors have accomplished, the old cart-ruts worn by them through long generations, are vastly safe and convenient to travel in. But it is believed, that in farming, as in other pursuits, something new and valuable will, from time to time, be discovered. And it is by inquiring minds, and en-

terprising hands, that these discoveries and improvements are to be effected. Why, then, should not our young farmers have the facilities for the exercise of their ingenuity—the incentives to rouse them to exertion, and the guides to direct their pathway to excellence? For this purpose, agricultural journals and newspapers are efficient helps; but they are not the only helps, nor do they treat so fully on the various subjects connected with agriculture, as may often be desired. To the investigation of some of these subjects, men, competent to the task, have devoted the labor of years, and have given to the public the results of their labors in invaluable treatises. Let such treatises be accessible to the young farmer, who is disposed to study them, and the good effects will hereafter be witnessed in carrying into practice the new and useful suggestions to be gleaned from them.

It may be objected, secondly, to the establishment of libraries by agricultural societies, that the benefits proposed to be derived from them proceed on the ground that a large part of those already engaged in farming, will avail themselves of them, while there will be, in fact, but a comparatively small number. The objection is, doubtless, entitled to consideration, but the only way in which it can be properly tested, is by actual experiment. It is the same objection that has been often urged against the forming of agricultural societies themselves, where none before existed; and as often, nearly, as these societies have been organized, the objection has vanished, like mist before the sun. The aversion of experienced farmers to consult books on agriculture, is, unquestionably, most prevalent; and equally true is it, that it will continue to exist so long as no systematic effort is attempted to overcome it. The best works on agriculture, and subjects connected with it, must be placed within their easy reach, and they invited to make a free use of them. Our own Commonwealth has done something to the accomplishment of this object, by causing reports on some of these subjects to be prepared by competent hands, and distributed throughout her boundaries. And yet, how small a proportion of her farmers have ever examined one of the most valuable of these reports, the report, by Dr. Harris, on the Insects of Mas-

sachusetts injurious to vegetation? Is it not, in part, because it has never found its way into their hands? And would not a library, like that here contemplated, be the means of conveying this, as well as other valuable works, to many farmers, who would not otherwise be able to obtain them?

But should only a few farmers repair to your library, what then? Is it not worth the expense to give to these few, the means of information? Will these men, men of reading and reflecting habits, be likely to hoard up the knowledge they thus acquire; or will they not rather dispense to others, the information derived from this source, either by conversation, or the example of an improved husbandry? It is thus, that most of the improvements in farming, make their way into general use; not by any new idea, suddenly promulgated, and as suddenly adopted, but gradually and almost imperceptibly, as they are commended to others, by the successful practice of a few intelligent and enterprising men. Place, in every farming community, but one reading, reflecting, and go-ahead farmer, a Buel or a Phinney, and the influence of his superior knowledge, as developed by his husbandry, will show itself, after a time, among its whole farming population. If, then, the advantages of these libraries should be, in the first instance, shared only by a few, it would not necessarily constitute a sufficient objection to their establishment.

A small number of books, judiciously selected, would suffice for a beginning, and it would soon be ascertained, whether or not an increase were demanded. Let the experiment be fairly made; let the farmers know that it is for their special use and enjoyment; let them know that it requires no competition, nor the winning of a premium, to share in its benefits; that it is free to every member of the society, and to all alike;—and then it will appear, whether there are farmers, who have a taste for reading, and a desire for the acquisition of knowledge, and who can find the time, however pressing their labors, for this agreeable and profitable employment.

PLYMOUTH COUNTY AGRICULTURAL SOCIETY.

This society held its twenty-ninth annual meeting, cattle-show, and exhibition of domestic manufactures and products of the soil, on the 11th day of October last. It was a remarkably fine autumnal day, cool enough for the comfort of the multitude convened on the occasion, and particularly pleasant for those who had duties to perform. The ploughing match, one of the first and most exciting scenes of the day, was, in a very spirited manner, executed by twenty teams. Some of the lots were ploughed in less time than was necessary to do the work perfectly. It is a subject of regret, that the haste of ploughmen, on these occasions, should ever form a just foundation for the severity of criticism on the imperfection of their work. The show of stock was thought to exceed in numbers that of some former years, more than in qualities. This is not a stock-raising county, and, comparatively, few prime animals are brought into it by purchase. The season of our shows, seems unfavorable for the exhibition of fattening cattle; most of the stall-feeding takes place at a later period in the year. In other departments, the articles were unusually numerous, and of excellent quality.

The annual address was delivered by Hon. William H. Wood, of Middleborough. The occasion was distinguished by commendable decency in the vast assemblage, and good order, as far it was possible to preserve it in the presence of crowds, both in the house and street.

SUPERVISOR'S REPORT.

Rewards of merit have been given in all civilized countries, as encouragements to progress in the knowledge of arts and sci-

ences. No other means have proved as effective, in carrying forward improvements. That the inventors of labor-saving implements, and of new and easy methods of intercourse among mankind, should be distinguished with honors and emoluments, seems to be universally admitted. That improvements in the art of cultivating the earth can properly be made the foundations of similar distinctions, some will not merely doubt, but positively deny. There seems to be an impression, on certain minds, that we were born with all the knowledge necessary for farmers, or have acquired it in witnessing, as all of us, to some extent, must, the practice of the art. A prejudice of this kind is likely to grow in a country where the soil is free to the acquisition of all the citizens, and where nearly all possess a portion of it. The very circumstance, which should induce strong desires of advancement in knowledge, is made the foundation of a blinding self-confidence, and an almost unconquerable attachment to usages pregnant with labor, and tending to poverty.

It is very difficult leading any mind in the pursuit of truth, which is resting in the persuasion, that all to be desired has already been attained. Something of this difficulty must be encountered in all our labors, to advance knowledge in the arts of culture. We should endeavor to establish, and undeviatingly pursue, methods calculated to allay prejudices and conquer existing aversion to the adoption of new modes of culture. Too much must not, at first, be required. Philosophic, like Christian truths, should be imparted as men are able to bear them. Perfection should, indeed, be the point of ultimate aspiration, but that point can be reached only in gradual advances. Every system of premiums should be framed with some reference to the views and the knowledge possessed by men in the locality in which it is intended to operate.

The most liberal provisions should be made to call attention to subjects intimately connected with the interests and sustenance of the whole population. In the varied soils and climates of this country, with the facilities of intercourse enjoyed, it is not to be expected that any single county will cultivate every article required by the wants of the inhabitants. It would not be prudent to attempt it. Changes of the most nat-

ural products of one region to another, forms a branch of commerce highly conducive to the prosperity of the whole country. But it is important for us clearly to understand what articles can be cultivated more consistently with personal and social interest, than purchased. Purchases of what we might easily obtain with a little labor, though made at the lowest rates, are poverty-producing operations.

Premiums should present direct and adequate encouragement to the cultivation of all articles suited to soil and climate, and should never be extended, for the sake of variety, to articles which can be produced only by artificial modifications of air and moisture. Opulent horticulturalists may properly gratify their tastes in the culture of exotic plants; but farmers, whose labor is often the chief resource, must not be encouraged to imitate them. Their attention should be primarily and chiefly directed to the substantial life-giving products of the soil, the rotation and apportionment of crops, which, at the same time, will meet social wants and advance personal interest. Let a list of premiums, from year to year, wear a sameness of appearance, if it embraces the objects, which ought to be prominent in the views and pursuits of farmers, it is enough—the purpose for which it was made, is accomplished.

We have offered a succession of premiums for the renovation of swamps, and the conversion of them into English meadows; extensive attention has been directed to this subject, and the result has been great improvements in the county. Our farmers, it was perceived, had proceeded in these operations somewhat beyond their resources of manure; and, the last year, it was thought expedient to substitute, for that class of premiums, offers for the most judicious and economical management of entire farms. These offers seem to have been favorably noticed; a number of entries have been made, and it is hoped, in 1851, statements will be made, embracing much valuable instruction concerning the management of farms, the comparative value and productiveness of different crops, the alternations best adapted to promote the interests of the cultivator, and keep in action the energies of the soil.

Only a single subject is this year presented for the considera-

tion of the Committee on Improvements, and therefore but one class of claims submitted to their decision. Six claims were entered to the premiums offered for compost manure. The competitors have done something better, than in former years; but have not employed all available means, either of increasing the size or strength of their compost heaps. One very important resource appears to have been almost or entirely neglected, the intermixture of green herbage with substances requiring the action of heat, to convert them into the food of plants. Three parts of peat-mud, two of green vegetable matter, and one of lime or ashes, will, in a few weeks, form a compost of equal energy, at least, with Bommer's patent. The statements we have received, indicate too confined views of the business of composting, and some of them may justly be charged with theoretic error; one man states that manure, composted in 1847, was applied to his land this year, in an improved state. This cannot be true, unless new substances were added, or the work only partially accomplished the last year. Soon as the desired processes have taken place in the compost heap, it is best to apply it to the field. Age cannot further improve it, but must, to some extent, impair its energies.

On perusal of the several statements, and hearing the remarks of the supervisor, the Committee on improvements recommend the following awards:—

To Jonathan Howard, 2d, of West Bridgewater, first premium, \$10 00

Mr. Howard made about 380 loads; he uses various materials in composting manure, and generally such as are well suited to the soils where it is to be applied. He uses considerable quantities of coal-dust, a very good article to correct the acidity of peat-mud. His operations are confined chiefly to materials found on the farm.

To Orsamus Littlejohn, of Middleborough, second premium, \$8 00

Mr. Littlejohn made 300 loads; he used various substances, some of which were purchased and carted several miles. This course is supposed, by many, to be too expensive for the gen-

era. practice of farmers, but he manifestly makes it highly improving to his farm, and considers it profitable.

To Chapman Porter, of Halifax, third premium, . . . \$6 00
 " Wm. H. Adams, of Bridgewater, fourth premium, Col-
 man's Agriculture.

The committee on produce recommended the following awards:—

To George Drew, of Halifax, first premium for oats, . . . \$8 00
 also first premium for best crop of white beans, 11
 bushels on half an acre, 6 00
 To George W. Wood, of Middleborough, second premi-
 um for oats, 6 00
 To Sylvanus Hinckley, of Middleborough, first premi-
 um for Indian corn, 132 bushels on the acre, . . . 8 00

That this quantity of corn was ever produced on an acre in the county of Plymouth, we are aware, will be doubted by multitudes, and therefore we think proper to state the manner in which the quantity was ascertained. One square rod, nearly central, and regarded as an average of the whole field, was harvested, and weighed the 13th of October. The corn appeared to be well ripened, and 75 lbs., in the ear, were considered equal to a bushel, and the product of the acre estimated accordingly. With these facts, the public can judge to what extent error might have possibly entered into the estimate.

To Orsamus Littlejohn, second premium, 99 bushels to the acre, \$6 00

This corn was raised on a thin soil, and great skill was manifested in the management.

To Nathan Whitman, of East Bridgewater, a gratuity of \$5 00

Mr. Whitman had 99 bushels on the acre, but the soil was better than that of Mr. Littlejohn.

To Paul Hathaway, of Middleborough, a gratuity of \$5, for three acres of corn raised in a swamp, which was not regarded

as eligible land for a corn crop. He, however, obtained, this year, a large crop of unripened corn. Also a gratuity of \$4, for the product of one acre, 92 bushels.

To Willard Wood, of Bridgewater, for corn, 88 bush-	
els on the acre,	\$3 00
" Daniel Alden, of Middleborough, 85 bushels,	2 00
" George W. Wood, of Middleborough, for turnips,	5 00
" Daniel Alden, of Middleborough, for beets,	5 00
" Benjamin Hobart, of Abington, a gratuity for wheat,	
though no entry was made.	5 00

Claims were entered to the premiums offered for the best crops of wheat and barley. No applicant obtained the required quantity, and, as statements were not forwarded seasonably, gratuities are not recommended. The applicants on the article of Indian corn, were this year unusually numerous, and the success of their experiments exceeds that of any past year. In the estimates of the expense of this crop, we perceive wide differences, but the highest estimate will show, that it is among the most profitable of crops. The person who obtained the greatest crop has advanced one idea, which, we think, will be new to most readers, and which, we hope, they will not adopt, without critical examination and repeated experiments. He recommends planting different kinds of corn in the same field; remarks that his seed corn was collected in four or five towns, and considers it as important to mix the different kinds of corn, as it is to cross the breeds of animals. Scarcely two kinds of corn can be found, which will ripen precisely at the same time; and it is certainly inconvenient, and, we suppose, to some extent, injurious, to have a part of the corn in a field, mature, two or three weeks before the residue. In a field where several kinds of corn had been planted, we might select seed of the kind that would ripen the earliest. And this is the only advantage we can imagine, that would be derived from the practice. If we should wish to avail ourselves of this advantage, there would be no occasion to plant a mixture oftener than once in ten or twenty years. General practice should be directed to the preservation of the different kinds of corn, pure as possible. Undesigned and unavoidable

mixtures, will ordinarily bring new varieties as often as the farmers can need or desire them.

For the Committees on Improvements and Produce,
MORRILL ALLEN.

COMPOST MANURE.

Jonathan Howard 2d's Statement.

I have made and carted on the farm, since last November, 380 loads of good manure; 100 loads of it were composted by thoroughly incorporating 27 loads of muck with 73 loads of manure taken from under the stable floors, consisting of loam, which was deposited there two years ago, to absorb the liquid manure that passed through the flooring. 250 loads of said manure were composted in the barn-yard and hog-pen, about one half of the principal materials of which consisted of good pond-hole muck, and the remainder of soil, from the sides of fences, and coal dust from the beds where charcoal had been made, together with the droppings from animals.

The muck, soil, &c., having been mingled in the yard, naturally absorbed the liquid manure that passed from the stock, yarded there; and, on each morning, in the warm season of the year, the excrement dropped by the neat stock, was thrown into a heap, and covered with a portion of the soil and dust in the yard, thus protecting it from the sun and air, and retaining its virtues. The remaining 30 loads consisted of turf ashes, made by piling and burning turf. The stock of the farm consisted of 13 head of neat cattle, one horse, and four swine, through the winter, but averaging about six swine through the season.

WEST BRIDGEWATER, Oct. 10, 1848.

Orsamus Littlejohn's Statement.

There is a place under my barn for cattle and hogs, thirty feet square, by eight and a half feet deep, walled up on three

sides, and cost thirty-five dollars. Into this place every refuse vegetable thing the premises afford is placed, to save the liquids from sinking, and the gases from rising. This becomes very rich and juicy, but not rotten, and amounts to about 100 loads annually.

My soils being very sandy and hungry, this place is cleaned out in the fall and spring, to make composts for them. I first put down a laying of mud, that was shovelled up the year before; I wet this smartly with soap suds, brine, ashes and water mixed, or some such thing, saved, made, or procured for the purpose; on the top of this, about one third as much manure is put lightly; above this green turf, from under wooden fences, and wet over; next, manure; next, quick-sand, clay or stiff loam, with burnt oyster-shells, ashes or lime, wet over as before; next, manure, and covered with charcoal dust and fine mud. In warm weather, it ferments rapidly, and is cut over in three or four weeks, and covered as before.

In this way, with not more than ten head of cattle and hogs, and twenty dollars' worth of materials purchased, with some loads of night soil, had for carting away, I have made, the past year, 300 loads of compost, of 40 feet each, of excellent quality, free from worms and weeds.

I have made several barrels of other compost, for potatoes and vines of all sorts, which has given full satisfaction. It contained about equal parts of charcoal dust, urine, hen dung, salt, lime, plaster and ashes.

The above manure cost twenty-two cents per load, every item being charged that the farm did not produce.

MIDDLEBOROUGH, Oct. 11, 1848.

Chipman Porter's Statement

In the fall of 1847, I carted into my yard, muck, soil, decayed leaves and vegetables, from the woods. On this I yarded my cattle. I commenced ploughing my yard in May, and have ploughed it a number of times during the summer. I have kept

through the year 11 head of cattle, one horse, and two swine. My barns stand 30 feet apart; this space I fill with muck and soil, about one foot deep, then shovel the manure from my barns on this. In the spring, I overhaul this, and mix as well as I can. In this way I make about 70 loads. My hog-yard is adjoining my horse stable, so that I throw this manure to my swine, to mix with muck and soil from where charcoal has been made, &c. I also cart soil into my house drain, and make a very good heap of manure in this way.

I have carried out 285 loads of manure, or 87 cords of compost.

HALIFAX, Oct. 24, 1848.

William H. Adams's Statement.

This year, I made and carried out 83 cords, 73½ feet of manure. A considerable part of this manure has not been exposed to the sun or rain, which preserves its strength, and keeps it from wasting. I think it would well pay every one to keep manure under cover. I have generally used an opposite soil from the land on which I have spread my manure, having tried this with good success, for a number of years. I have added soil to my manure, as often as it was required.

Bridgewater, Oct. 28, 1848.

OATS.

George Drew's Statement.

The land on which I sowed my oats measured an acre and 2½ rods. One half was planted to French turnips, and one half to white beans, in 1847. I ploughed it deep in April, 1848, and spread 2½ cords compost manure, on the half I planted to beans last year, on the other half, I put no manure. I sowed 3

bushels of oats on the furrows, and cross-ploughed them in (deep) and levelled the ground with a cultivator.

Expense of ploughing, sowing, cross-ploughing, cultivating, cradling, raking, binding, carrying in, threshing, winnowing, and seed sown, \$13 65. The oats, which grew on the said land, measured sixty-two bushels.

HALIFAX, Oct. 23, 1848.

George W. Wood's Statement.

The land on which my oats were raised, is a loamy knoll, with a clay bottom, and was planted to potatoes, in 1847. Before planting the potatoes, I spread 30 loads of good compost manure. In April, 1848, ploughed and sowed the oats; first ploughed, then harrowed it well, sowed $2\frac{1}{2}$ bushels good oats to the acre, then cultivated the oats in, then harrowed and bushed, till I made the ground very fine and stocked it down to grass. July 21 to 24, cut the oats, raked, bound and put them in the barn; Sept. 11 and 12, threshed and winnowed them up—they measured a little more than 56 bushels on one acre, and $\frac{2}{3}$ of a rod.

Expense of ploughing,	.	.	.	.	\$1 23
Harrowing, cultivating, bushing, sowing oats and grass					
seed, .	.	.	.	.	2 13
Cradling, 75 cents. Taking up and getting in,	\$1 47,				2 22
Threshing and cleaning,	.	.	.	.	4 12
$2\frac{1}{2}$ bushels of oats for seed	.	.	.	.	1 17
					<hr/>
					\$10 87

Income.—I had, it was judged, one ton of straw worth \$6 00, 56 bushels oats, at 44 cents, \$24 46, making \$30 46.

MIDDLEBOROUGH, Oct. 7, 1848.

INDIAN CORN.

Sylvanus Hinckley's Statement.

The land on which I raised my corn had been mowed for the last eight years. The last year, the worms eat the grass all out. It was ploughed in December, while the ground was covered with snow. It was harrowed three times in the month of April. Drew on about 40 small ox-cart loads of manure, which was composted from muck, soil, horse, cattle and hog's manure, well mixed and ploughed in; furrowed $3\frac{1}{2}$ by $1\frac{1}{2}$ feet, and dropped half a shovel-full of the same manure into a hill, and planted 12th and 13th of May, two or three corns in a hill. Cultivated and hoed twice in June, and hoed in July. The seed was gathered in Middleborough, Barnstable, Wareham, Bridgewater and Taunton, and all mixed. I think it is as essential to mix the seed of corn, as that of cattle or swine.

MIDDLEBOROUGH, Oct. 16, 1848.

Orsamus Littlejohn's Statement.

The acre of land entered by me, for the best crop of corn, has been in rather a barren state for some years, not producing more than 500 lbs. of good hay in any one year. The soil being sandy and hungry, it was ploughed, May 8th and 9th, about seven inches deep; 10th to 15th, twenty-six loads, of 40 feet each, of good compost manure was spread and well harrowed and bushed in; 18th and 19th, planted—the rows were marked out with cultivator teeth, $3\frac{1}{2}$ feet apart each way. Five and six corns were dropped into a hill, 6 or 8 inches apart; about one quart of good fine compost on top, and covered as fast as dropped, but not deep. Ten quarts of seed, three varieties, names not known, selected from crib, soaked from four to six hours in strong chloride of lime, and rolled in sulphur and fine gunpowder. It has been cultivated and hoed three times, in its hottest and driest state.

150 PLYMOUTH AGRICULTURAL SOCIETY.

Expense of ploughing,	\$3 75
Compost,	7 50
Spreading and harrowing,	2 56
Planting,	3 00
Seed and preparation,	0 50
Cultivating and hoeing,	5 03
	<hr/>
Total,	\$22 34

MIDDLEBOROUGH, Oct. 10, 1848.

Nathan Whitman's Statement.

The acre of land, on which I raised my corn, from which the supervisor allowed me 99 bushels and $\frac{1}{8}$, was green-sward, 1847. Ploughed up in March, and laid until fall; then I ploughed in what weeds there were on it. May 10th, 1848, I ploughed in 40 loads compost manure, and the 15th, planted it with white corn, the seed selected from stalks having two ears. The first of July, went through, with cultivator, twice in each row; then hoed over the ground, without hilling, and, in August, went through with the cultivator, twice in each row, and hoed up the weeds; I spent 16 hours labor, besides the cultivator.

EAST BRIDGEWATER, 1848.

Paul Hathaway's Statement.

The three acres of corn, for which I have claimed a premium, grew upon swampy land. From the abundance of wet the three last years, my ditches were clogged with mud, which brought in rushes and meadow grass, which would hardly pay for mowing; therefore, I planted corn, thinking corn-fodder would be worth more than rushes. Commenced ploughing, May 10th; carted upon the three acres 86 loads of compost ma-

nure, and spread three fourths of it ; the remainder put into the hills ; commenced planting, May 20th, finished June 13th, a part was my seed corn, the remainder was the Canada yellow corn ; hoed twice without harrowing.

Expense of ploughing,	\$8 00
Planting manure in the hill,	7 00
Hoeing twice,	10 00
Manure, one half to the corn,	43 00
Seed corn,	0 75
Cutting stalks and harvesting,	18 00
Total,	<u>\$86 75</u>

My acre of corn grew upon a gravelly loam, and was ploughed last September. This spring, spread 41 loads of compost manure ; ploughed it in, and harrowed the same ; furrowed a little short of three feet ; planted, May 5th ; harrowed twice in each row, both ways ; cut up the weeds around the hills ; second time, harrowed once in a row, each way, and removed the weeds, as before. Did nothing more, except cutting up a few weeds that remained. Seed corn selected at husking time, last fall, being a mixture of yellow, white, and flesh-colored corn.

Expense of ploughing,	\$2 00
Carting and spreading manure,	6 00
Second ploughing and harrowing,	2 00
Manure, half to the corn,	20 50
Planting, and twice harrowing,	2 00
Seed corn, and cutting up weeds,	3 00
Topping stalks, and harvesting,	9 00
Total,	<u>\$44 50</u>

MIDDLEBOROUGH, Oct. 30, 1848.

Willard Wood's Statement.

The land I enter for premium, for Indian corn, is a high gravelly loam. In 1847, I cut from it about one fourth of a ton

of hay per acre. Ploughed it in October, 1847. From April 20th to May 3d, 1848, I drew out twenty loads, of 40 cubic feet each, of compost manure, made from hogs and cattle, mixed with soil; then spread and ploughed in the same; harrowed and furrowed so as to make five rows to the rod one way; then drew out ten loads of manure and put in the hills; made the hills two feet apart. The manure put in the hill of the same quality as that spread. May 5th, planted the corn, put three corns in a hill. I planted the Whitman corn, the seed corn selected from the corn crib. June 1st and 2d, hoed; 15th and 16th, hoed the second time, and put one gill of ashes around each hill. July 7th and 8th, hoed the third time; cut the stalks the first of September. Oct. 12th, the supervisor came and harvested one rod, which weighed $41\frac{1}{2}$ lbs., making 88 bushels to the acre.

Expense of ploughing first time,	\$2 00
Drawing out and spreading 20 loads of manure, .	1 75
Ploughing in manure,	1 00
Harrowing and furrowing,	0 75
Drawing out 10 loads of manure to put in the hills,	0 62
One day planting, 2 men and boy,	2 50
Cultivating, 50 cts., hoeing first time, \$2,	2 50
Putting on ashes, cultivating and hoeing second time,	3 50
Cultivating and hoeing third time,	2 25
30 loads of manure,	22 50
27 $\frac{1}{2}$ bushels of ashes, at 12 $\frac{1}{2}$ cts.,	3 43
Use of land,	4 00

Total, . . . \$46 80

Value of the crop, 88 bushels corn, at 92 cts., .	\$80 96
“ of the manure for next crop,	8 64
I think the corn fodder will be worth,	2 50
more than the expense of harvesting.	

Whole income, . . . \$91 10

BRIDGEWATER, Oct. 12, 1848.

Daniel Alden's Statement.

The land, on which my corn was raised, is a sandy loam. In 1847, it was in grass; in October, of that year, it was ploughed; in the spring of 1848, carted on 40 loads of compost manure, and spread and cross-ploughed, with a light furrow, not disturbing the sod; then harrowed twice; then furrowed $3\frac{1}{2}$ feet apart, each way; planted, May 12th, four kernels in a hill. The corn was dressed four times with a cultivator, and once with the hoe. The field was kept clear of weeds through the season; about the 10th of June, put 30 bushels of ashes around the hills of corn. Cut the stalks Sept. 14th, and harvested the corn Oct. 12th. According to the measurement of the supervisor, it yielded 85 25-74 bushels per acre. Seed corn, white, selected from where two ears grew on one stalk. The cold week in August injured the crop materially. The whole expense of raising the crop, exclusive of the manure, did not exceed \$15.

MIDDLEBOROUGH, Oct. 17, 1848.

TURNIPS.

George W. Wood's Statement.

The half acre of land I entered for premium, for the greatest quantity of French turnips, is a clayey loam; was planted to corn, in 1847. The sward not being rotten enough to lay down to grass last spring, I concluded to plant one half to French turnips.

Expense of ploughing, 75 cts., harrowing, 50 cts.,	\$1 25
Ploughing and harrowing, \$1, five days work planting, \$5,	6 00
100 bushels of ashes, \$12 10, carting ashes, \$3,	15 10
Cultivating, and $2\frac{1}{2}$ days hoeing, \$2, cultivating, hoeing, and hoeing weeds, \$3 50,	5 50
Three hands, 2 days harvesting, \$6, seed, 50 cts.,	6 50
Total,	<u>\$34 35</u>

I planted the turnips so as to include seven rows to the rod one way, and eighteen inches the other; put about a pint of leached ashes in each hill, mixed the soil with the ashes, dropped the seed by hand, and covered with the hoe. I bought the seed of Thomas Covington, raised by him. On the 13th inst., the supervisor came, and measured and weighed one rod; it weighed 293 lbs., making, after the rate of 837 8-56 bushels to the acre. I have, this day, completed harvesting the turnips; they measured 435½ bushels, on 81½ rods of land, as near as I could measure.

MIDDLEBOROUGH, Oct. 28, 1848.

BEETS.

Daniel Alden's Statement.

The land on which I planted beets was planted to corn, in 1847, and is a sandy loam. April 28, spread six loads of compost manure, and ploughed 8 inches deep. May 25, ploughed and carted on 6 loads of muck and ashes, mixed together; 26th, furrowed 2½ feet apart, then spread the muck and ashes in the furrow, and covered with the furrow; then dropped the seed 12 inches apart, and covered them with a strip of iron. The seed was bought of Mr. Prouty, of Boston, sugar and turnip beet. June 28, hoed the first time; July 18, hoed again; Aug. 7, pulled out the weeds.

Expense of seed, 37 cts., two days hoeing,	\$1 50,	\$1 87
One and a half days hoeing,	\$1 13, pulling weeds, 25 cts.,	1 38
Carting manure and ploughing,	. . .	2 00
Planting, \$1 50, harvesting \$2,	. . .	3 50
Total,		\$8 75

Making 687 bushels and 48 lbs. per acre, as stated by the supervisor, or 172 bushels of beets on the quarter acre,—at 25 cts., \$43.

MIDDLEBOROUGH, Oct. 17, 1848.

WHEAT.

Benjamin Hobart's Statement.

Although I did not enter a claim for a premium, on the raising of wheat, the present year, yet, having succeeded very well with that grain, I state the result; and I do it more freely, as I have no claim for any reward. I have received several premiums hitherto, for success in raising this grain.

This year I sowed a little less than one and a half acres, solely with a view to lay down the same to grass, and get a profitable crop. I prefer to lay down to grass with wheat than any other grain;—the result was, I had $39\frac{1}{2}$ bushels of good clean wheat, averaging over 26 bushels to the acre. The wheat was sowed in the first week in May, and reaped in August. The land, the previous year, was three fourths to corn, and the rest to potatoes. I ploughed it the last of April; put on about 20 loads of compost manure; afterwards ploughed and harrowed it, and sowed the wheat and harrowed it in; sowed grass seed, and smoothed the whole with a brush. I sowed a little over two bushels to the acre. I used no plaster or lime, and did not soak the wheat. I sent to Boston for the seed, only saying I wanted the best kind; it proved well, and was the golden straw wheat. In a former communication, I gave it as my opinion, that the same kind of wheat, sowed continuously, was best; but further experience satisfied me, that, after a number of years, it is best to change the seed. From all my experience, I find the wheat crop to be the most profitable of all the small grains, and much the best when the land is to be seeded down to grass.

SOUTH ABINGTON, *Sept.* 30, 1848.

 PLOUGHING—SINGLE OX-TEAMS.

There were 24 entries for ploughing, and 20 persons appeared and ploughed. We have awarded the following premiums:—

To Newton Mitchell, Bridgewater, 1st premium,	.	\$9 00
" Daniel Alden, Middleborough, 2d	"	8 00
" John J. Howard, Bridgewater, 3d	"	7 00
" William Wood,	" 4th	6 00
" Calvin Chamberlain, East Bridgewater, 5th premium,		5 00
" Philander Wood, Bridgewater, 6th	"	4 00
" Martin D. Holmes,	" 7th	3 00

One volume, each, Massachusetts Ploughman, to Virgil Ames, Samuel W. Bates, and Van R. Swift, of Bridgewater. One volume, each, Boston Cultivator, to Oliver Jackson, Darius Dunbar, West Bridgewater, and Elijah Cushing, Hanson.

We also award to Virgil Ames and John J. Howard, one dollar each, they being ploughmen without drivers. All but four competitors had drivers. Daniel Alden used Prouty's plough, and the other six cash premiums were awarded to persons who used the Worcester plough. The time allowed for performing the work was 45 minutes; the shortest time occupied by any competitor was 16 minutes, and all performed it within the time. The work was generally well done.

For the committee,

SIMEON CURTIS.

DAIRY.

There were 22 samples of butter, and 15 samples of cheese, entered for premiums; each sample accompanied with a statement of the process of manufacture.

Thalia E. Weston's Statement.

My process, in making butter, is to strain the milk into stone or tin pans; let it stand a sufficient time for the cream to rise; skim it, and churn it in a stone churn, until the butter is well

separated from the butter-milk ; rinse it in cold water, until the water looks clear ; then add an ounce and a quarter of rock salt, to a pound of butter ; then set it up for a day or two, work over again, then lay it down in a stone pot, and cover it close with a cloth and cover. The morning before cattle-show, took it up, and again worked it.

MIDDLEBOROUGH, Oct. 10, 1848.

E. H. Kingman's Statement.

The butter I present for inspection, was made in the following manner, which is my usual method of making butter. The milk stands from 24 to 36 hours before skimming, according to the weather ; in hot weather, churn once in two days. The butter is taken from the churn, thoroughly rinsed in cold water, and then salted with ground rock salt, probably about one ounce to the pound. It is then put in some cool place, until the next morning, then worked over and done up in pound balls.

WEST BRIDGEWATER, Oct. 11, 1848.

Judith L. Bryant's Statement.

The milk is brought in from the cows, in as clean a condition as possible, and immediately strained into clean tin, or white earthen pans, used for nothing else ; let it stand 24 to 36 hours, then skim and churn before it gets sour or bitter ; then take the butter into a wooden bowl, work out the butter-milk, and salt it with the best fine rock salt ; let it stand in a cool place till morning, work it over again, and 24 hours after, work out the remaining butter-milk, then make it into balls, when it is fit for use.

PLYMPTON, Oct. 11, 1848.

Mary M. Macomber's Statement.

I milk four cows, and make two curds. I run the milk up as soon as it is milked, and put in it just rennet enough to fetch the milk ; if there is too much, it is apt to give the cheese a bad taste. Let the milk stand one hour after it has come to curd, and then cross it off about an inch and a half square, and let it stand until it begins to settle ; then dip it into a cloth to drain, and stir the cloth once in a while, till it is quite dry ; then slice it into scalding water, and let it stand until it is quite cool ; then I keep it in cold water, till the next day, when I make my cheese. I then put it in warm water till warmed through ; and let both the curds get almost cold, before breaking. I break it with my hands quite fine, and squeeze it as dry as I can with my hands, before putting it into the hoop. Then press with very little weight, for three hours, then turn and put on more weight. Let it press till the next morning, then turn it into a dry cloth, and rub it well with salt, and put on all the weight I can. Turn it again at night, and rub with salt, and press till the next morning. Take it from the press, and rub with pork fat, and set it in a cool place to dry ; turn and rub it with pork fat every morning till it is dry. I use a tea-cup full of ground rock salt, for a peck-cheese.

HANSON, Oct., 1848.

Elizabeth Hayward's Statement.

The milk is set warm from the cow, and, when turned, and slowly and thoroughly drained, sliced into water as warm as you can bear your hand in ; when cold, it is placed in a cloth for draining, and drenched with cold water ; and, when well drained, placed in an earthen vessel of cold water, in the cellar, till the next day, when another curd is made in the same way, upon which, while scalding, the first is laid, when both are drained off together, and drenched as before ; when dry, it is made fine, and the salt well stirred in, and to 25 lbs. cheese.

add 5 oz. salt, and it is ready for pressing. When it has been pressed 24 hours, it is taken out and covered with thin cloth, snugly sewed at the edges, and put back for another day's pressing. When done, it is rubbed over with lard or fresh butter, and turned daily, till ripe. The cloth protects the cheese from flies and mould, stays it while the rind is tender, and prevents it from sticking to the shelf. It is not a quarter of the work, to tend cheese made in this way, as without a covering. A free use of cold water in drenching curd removes all wheyey substances, which tend to rancidity, and much less salt is necessary; consequently the cheese is softer, especially when lightly scalded.

PLYMPTON, Oct., 1848.

Annie W. Wood's Statement.

I strain my night's milk into a tin kettle, which I use to warm it in. In the morning, take off the cream that rises during the night, and add warm milk to it, stirring until it mixes; then put it into the kettle, and, while warming, stir it all together, until it is as warm as when first milked from the cow; then put in my morning's milk, and a sufficient quantity of rennet, to curdle the milk in a short time. After separating the curd from the whey, hang it in a cool place, till the next day. I then put warm whey to it, and let it remain until I have scalded my second curd; then put it together, and drain it till it is quite cool, before I chop and salt it. I use ground rock salt.

BRIDGEWATER, Oct., 1848.

BRISTOL COUNTY AGRICULTURAL SOCIETY.

The twenty-fifth anniversary of this society was held at Taunton, on Thursday, the 12th day of October last. The weather was pleasant through the day, and it was highly prized, it having been stormy the two previous exhibitions. The attendance, both of people and stock, was unusually large. The show of breeding stock was much more extensive than in former years, and much of the stock was excellent. Ten fat oxen, six pairs of steers, and six colts, were entered for premium, all of which were on the ground.

No address was delivered before the society, but several speeches were made at the dinner table.

PLOUGHING.

The fashion that now prevails at our ploughing matches, exceeds the economy even of a Franklin; for he once quaintly said,

He that by the plough would thrive,
Himself must either hold or drive;—

which, all will agree, is very true and sound doctrine. But Dr. Franklin himself, it would seem, with all his philosophy, never once thought or dreamt that the same individual could hold and drive both, and that this practice would be brought about so soon as the first half of the nineteenth century.

The plough is not only a very ancient implement of husbandry, but the most useful and valuable of all implements, being the greatest labor-saving machine of any; for, if we were now obliged to resort wholly to the spade, we should need to have our importation of foreigners to this country (which is now

deemed by many to be injuriously large,) doubled and trebled, to assist us in performing the necessary labor in tilling the ground.

The improvement made in the plough, since it was first brought into use, is truly admirable. Think, for a moment, of the difference between the sharpened log, with two handspikes stuck into it for handles, and those beautiful implements which we have seen so successfully used this morning;—and the difference in the work goes hand in hand with the improvement of the implement.

The ploughing match is generally considered the most interesting part of our exhibition. For a quarter of a century, this interest, on the part of men, and sometimes of women, old and young, has been unabated and increasing. We go forth at the appointed hour, surrounded by our families, friends and neighbors, to the place of trial, to exchange mutual greetings, and to enjoy the moderate and rational excitement of the manly contest, and to be reminded that, by the use of the plough, and by patient and cheerful industry, can the earth be made to contribute to our sustenance, comfort and happiness.

At some of the earliest ploughing matches, in different societies in the Commonwealth, the premiums were given to those who most speedily performed the work. During more recent years, however, this extraordinary speed has not been encouraged; and the ploughmen have been charged to regard the excellency of the work, rather than the time in which it is performed.

The whole number of teams engaged in the work, was twenty, nine of which were of one yoke of oxen each, without drivers; five were horse teams, also without drivers; and six were of one yoke of steers and a horse each, without drivers.

CROMWELL LEONARD, *Chairman.*

WORKING OXEN AND STEERS.

The trial of working oxen and steers was, as usual, one of the most interesting features in the exhibition. The cattle were

generally in good condition, and well trained, and some of them worked admirably, demonstrating that a gentle but decided *word* from the teamster, as effectually controls their movements, as does usually the ponderous thong, or the boisterous *haw* and *gee*. In the appearance, size and number of cattle, there was a great falling off from former years. When this society was first established, they were the *lions* of the show. Then they were considered indispensable, with the good farmer, on a well ordered farm; but now they have fallen with us into neglect, and we rarely enjoy the luxury of seeing, either upon the farm or the highway, a sleek, well-formed yoke of oxen, as in the olden time, patiently and proudly bearing along their heavy burdens. Why is it? The question has often been asked, and we put it to our agricultural friends, why is it, that these noble animals, which, thirty years ago, were the pride and boast of New England farmers, are so generally disused, and their places supplied by the no less noble animal, the horse?

From our own inquiries, we are well satisfied, that little is known by those who ought to know, of the comparative value, for farming purposes, of the ox and the horse; and we are inclined to believe, that, in most cases, substituting one for the other is a matter of fashion or fancy, rather than the more weighty and substantial consideration, economy.

It is a general complaint amongst those of us who are engaged in agricultural pursuits, that our labor at best, yields but small returns; farmers, nevertheless, some of us must be; the land, poor as it is, must be cultivated; and we, whose lot it is to labor in this primitive, healthful, and most respectable employment, must see to it, that so important a part of farming operations, as the moving power, is judiciously and economically cared for.

The first cost of a yoke of oxen is much less than that of a pair of ordinary horses; they can be kept on the farm at less than half the expense; can do as much work at the plough, on the average, and do it as well; can do more on the hill-side, in stony land, and in the woods; are less liable to disease and accident; have fewer bad tricks; and, at last, when worn out, become a valuable appendage to the shambles, and command a price, equal to their first cost, from the butcher.

On the other hand, the horse, unless he be of sound constitution, good temperament, well broken, and carefully trained, is, in a majority of cases, a source of vexation, trouble, and expense; and, when disabled by disease, or accident, to which he is peculiarly liable, or when old age overtakes him, is entirely worthless.

The committee would like to be informed, whether the ordinary hard work of a farm can be more economically done by the class of horses now generally used for the purpose, or even by the substitution of a better class of horses, than under the old system, viz., by well formed, well fed, and well trained working oxen.

SAMUEL CROCKER, *Chairman.*

BREEDING STOCK.

The committee report, that they are much gratified with the exhibition of breeding stock. It was much more extensive than in former years, and much of the stock was excellent. From the great number of animals to be examined, the committee have been obliged to perform their duty very hastily, and regret that they cannot, at this time, give any detailed account of the several animals. They would, respectfully, urge upon all persons, intending hereafter to exhibit cows, the importance of complying with the request of the society, to measure the milk, and furnish written statements with regard to their yield of milk and butter, which would greatly facilitate the labors of the committee. The following premiums are awarded:—

For the best approved bull, Ayrshire and native, to H.	
K. W. Allen, of Attleborough,	\$12 00
For the 2d best approved bull, to Benjamin F. Dean,	
of Raynham,	10 00
For the 3d best approved bull, to Henry Southworth,	
of Taunton,	8 00
For the 4th best approved bull, Hereford, to William	
F. Dowland, of Taunton,	6 00

For the best approved bull calf, Durham and native, to Israel Brayton, of Somerset,	\$3 00
For the 2d best approved bull calf, Devonshire and native, to John Arnold, Jr., of Norton,	3 00
For the best approved heifer calf, native, Durham, and Ayrshire, to J. H. W. Page, of New Bedford,	4 00
For the 2d best approved heifer calf, to Asaph Carpen- ter, of Rehoboth,	2 00
For the best and approved cow, native, Ayrshire, and Durham, to J. H. W. Page, of New Bedford,	10 00
For the 2d best and approved cow, native, to Williams Dean, of Taunton,	8 00
For the 3d best and approved cow, native, to Daniel Wilbur, of Somerset,	6 00
For the 4th best and approved cow, native, to Horatio Leonard, of Raynham,	4 00
For the best and approved heifer, native, Ayrshire, and Durham, to J. H. W. Page, of New Bedford,	5 00
For the 2d best and approved heifer, native, to Theo. McCormack, of Taunton,	3 00

JACOB DEANE, *Chairman.*

J. H. W. Page's Statement.

I offer for exhibition the following stock, all raised by me, at New Bedford, viz. :—

1. Cow, *Jenny Lind*, 5 years old, June 16, 1848. Mother reputed to be half native and half Durham. Father, Randall's full blood Ayrshire.
1st calf, January, 1846—bull—sold.
2d calf, March 16, 1847—heifer, *Jane Eyre*.
3d calf, April 25, 1848—heifer, *Lily*.

I have had the milk weighed, and a regular account kept, from the 1st of May till now, as per certificate of Philip Grant, Jr., herewith submitted.

Weight of Milk.

1848. May,	1301 lbs. 8 oz.	Average per day	42 lbs. nearly.
June,	1364 "	" "	45 $\frac{1}{10}$ lbs.
July,	1187 "	" "	38 $\frac{3}{10}$ "
Aug.	1028 "	" "	33 $\frac{1}{10}$ "
Sept.	963 " 8 oz..	" "	32 $\frac{11}{10}$ "

5844 lbs.

Average per day for 5 months, or 153 days, 38 lbs. and a fraction. Largest quantity any day, 50 lbs.

Milk was used liberally in the family, and the butter made from the cow, from the 10th of May to the 25th of September, was as follows :—

May,	.	.	.	.	31 lbs. 8 oz.
June,	.	.	.	.	42 " 8 "
July,	.	.	.	.	39 "
Aug.,	.	.	.	.	31 " 8 "
Sept.,	.	.	.	.	27 " 8 "

Total, . 172 lbs.

For the treatment of the cow, I refer to the certificate. The cow is with calf by Randall's Ayrshire bull, *Baldwin*, from 28th August. She gave 6 quarts of milk four weeks before she dropped her calf, and was dried with difficulty.

2. Heifer, *Jane Eyre*, from *Jenny Lind*, and a bull supposed to be part Ayrshire, pedigree not known; 18 months old 16th Sept. 1848—with calf by Randall's Ayrshire bull, *Baldwin*, from 14th August.
3. Heifer calf, *Lily*, born 25th April, 1848. Mother, *Jenny Lind*; father, Randall's full-blooded Ayrshire.

This calf sucked but once or twice, and was fed on skim milk, from a few days old, and turned to grass when about 3 months old.

By a sealed *beer* measure, I find that $2\frac{1}{2}$ lbs. are required to the quart; 5844 lbs. equal to 2337 beer quarts in 5 months, or 153 days, equal to $15\frac{3}{4}$ beer quarts per day. I have no other cow.

I, Philip Grant, Jr., certify, that I have had the care of J. H. W. Page's cow, *Jenny Lind*, heifer, *Jane Eyre*, and calf, *Lily*, since the 25th of April last; the cow had hay until pasture, and has been in ordinary pasture during the season. For a short time, when grass was very short, I gave the cow 1 quart of oil meal twice a day; the rest of the time about 3 pints of oil meal once a day. From about the middle of August to 30th Sept., I fed the cow once a day, usually, with corn, sown broadcast, grass being very short. She has had no other extra feed. I have milked the cow all the time, except a few days when I was absent, and weighed the milk, and kept an accurate account, which is in Mr. Page's hands, and the result is truly stated above. When I was absent, T. Mahoner milked and kept the account.

The heifer, *Jane Eyre*, has had nothing but grass, and corn fodder when the cow had it.

From the 8th day of June, to the 8th of July, I found it necessary to milk the cow three times a day, her bag was so full; she did not leak her milk, but her bag was so full it seemed to pain her. She is kind and gentle in all respects.

I, Joanna Doneavan, certify, that I have had charge, during the season, of the milk of J. H. W. Page's cow, *Jenny Lind*; that I have used milk for all purposes in the family, and made, between the 10th of May, and 25th of September, 1848, 172 lbs. of butter, of which I kept an accurate account, which is now in Mr. Page's hands. Butter had been made by another person, before May 10th, and I have made butter since 25th September, four times, of which I have not taken any account in the above 172 lbs.

NEW BEDFORD, Oct. 11, 1848.

William Dean's Statement.

My cow is of native breed, nine years old; calved March 20th, calf taken from the cow when four weeks old, at which

time she gave 14 quarts of milk per day, making $1\frac{1}{2}$ lbs. of butter per day. Number of quarts given in the month of June, $15\frac{3}{4}$ per day, beer measure.

Number of quarts in the month of September, 12 per day.

The cow has been fed in a common pasture, with two quarts of meal per day.

TAUNTON, Oct. 12, 1848.

GRAIN AND VEGETABLE CROPS.

There have been six entries for premiums, viz. :—one for hay, one for carrots, three for corn, and one for a farm.

The committee regret that some of the statements of the expense of cultivation and amount of manure used on the land, are not so full as they should have been, and they would recommend that no premium be awarded hereafter, unless such a statement as is required by the published bills of the society, offering such premium, shall be furnished by the claimant. We have awarded

To John C. Dodge, of Attleborough, first premium, for the best crop of hay, being 8050 lbs. to one acre,	\$5 00
“ John Williams, of Taunton, for the best crop of carrots, he having raised 160 bushels on one quarter of an acre,	4 00
“ Andrew H. Hall, of Taunton, for best crop Indian corn, he having raised $74\frac{1}{4}$ bushels on one acre,	10 00

We also recommended a gratuity of \$15, to James M. Bishop, of Seekonk, on his farm;—he having, in the opinion of the committee, failed to furnish so full a statement of the profits and expense, as to entitle him to a premium.

It appears, by the statement of Mr. Bishop, that his system of farming or gardening, is a profitable one, as he raised about \$1000 worth of garden roots and vegetables, for market, the past year, on a farm of about 40 acres. What part of the farm

was in grass, is not stated. His crop of hay is estimated at 15 tons; millet 4 tons; and corn 100 bushels. He did not keep any account of the profit of the stock kept on the farm, which the committee are of opinion, should have been done to arrive at the true profit.

A. H. HALL, *Chairman.*

John Williams's Statement.

I planted one quarter of an acre of ground, the last season, to carrots, and raised 160 bushels, which were large and handsome.

I ploughed the ground in April, which was planted the year before to squashes, turnips, carrots, &c. I then spread ten horse loads of manure, about one foot at a load, which was about one half of stable manure, and the other of night soil, mixed with loam. I then ploughed it again, and levelled it by hand with a rake, to keep the ground as loose as possible. I then sowed about half a pound of seed, in rows 14 inches apart, with a machine, which took me about two hours. When they came up, they were too thick, but not so thick as the weeds. The first three or four weeks, I had to tend them closely, but, after that, they took a start, and the weeds had to give way. I suppose it was worth eight or ten dollars, to keep them free from weeds. I sold 50 bushels in the ground, for 20 cents per bushel, and about ten bushels after I had harvested them, for 33 cents per bushel. The remaining 100 bushels I fed out. I fattened a steer on them, giving him 50 bushels in the same number of days,—but the beef was not so good as I expected, though decent. I consider them much better for horses than for horned cattle. I believe a horse will thrive as well on carrots, as any thing you can give him. Cows are very fond of them, but whether they are very beneficial for milk, I have not had experience enough to determine.

TAUNTON, *March 7th, 1848.*

Andrew H. Hall's Statement.

The acre of land on which I raised corn this year, was all mowed in 1846, excepting about 30 rods, which were planted. The grass land had no manure put upon it. That planted to corn had 45 one-horse loads to an acre, and it harvested about 60 bushels. The grass land produced about one ton of hay to an acre; it was ploughed in the fall, eight inches deep. In April, 1847, five cords of manure were drawn, on the land for corn, then ploughed lightly and harrowed; then furrowed one way 3 feet 7 inches apart, and $4\frac{1}{2}$ cords of manure were put in the hills, which averaged about 20 inches apart in the furrows. On this manure the corn was planted, putting two or three (seldom more than two,) corns in a hill, It consumed 9 quarts of seed corn, and was planted on the 11th and 12th of May. On the 7th of June, ploughed two furrows in a row, turning the dirt from the corn; on the 15th, harrowed twice in a row; 24th do. once and hoed, leaving the ground level; July 2d, do., and hoed $\frac{1}{2}$ of it; the remainder was hoed but once. July 20, I went through the rows, and pulled the weeds. Sept. 15, cut the stalks; Oct. 14, began to harvest; 19th, finished. Nov. 15 and 16, weighed the corn in ears; it weighed 5574 lbs. The corn was a large yellow kind; most of the ears had but eight rows.

Expense of the Crop.

Ploughing,	\$2 30
$9\frac{1}{2}$ cords manure, at $\$4\frac{1}{2}$,	42 79
Drawing "	7 50
Spreading, cross-ploughing, and harrowing,	1 75
Furrowing and Ploughing,	2 75
Ploughing and harrowing among corn,	1 50
Hoeing, 1st time,	1 50
" 2d " 3 hours,	0 30
Pulling weeds,	0 70
Cutting stalks,	2 00
Harvesting,	6 75
Seed corn,	0 25
	<hr/>
	\$70 09

Credit for the Crop.

744½ bushels corn, at 85 cts.,	.	.	.	\$63 18
Corn fodder,	.	.	.	12 00
				<hr/>
				75 18
Expense,	.			70 09
				<hr/>
				\$5 09

Probably not more than two thirds of the manure went to the crop. If the other third were taken from the expense, it would increase the profit about \$17.

TAUNTON, *March*, 1848.

James M. Bishop's Statement.

I came into possession of the farm in the spring of 1836. It then contained 37 acres, and its value was estimated to be about \$2500. It is probable, that, if every thing which could have been produced from it, by the most skilful management, during that year, could have been sold to the best advantage, its value would not have exceeded \$100. The team, kept on the farm, consists of two horses and a yoke of oxen; these, with two cows, complete the stock. About four hogs are generally kept through the year. From the stock and hogs, with the aid of seaweed, salt mud, loam, &c., are manufactured about 40 cords of manure each year, which is worth about \$3 per cord. The stock is kept mostly in the barn during the foddering season, and stabled every night during the year. The urine is all saved. It passes under the barn into a vat, prepared for the purpose of receiving it and the solid manure, which are there mixed with seaweed, salt mud, loam, or straw, in the proportion of one part solid manure to three parts of the material with which it is composted. The hog-yard and sink drain are supplied with a sufficient quantity of seaweed and loam, or mud, frequently enough to prevent the strength of the manure from being carried off by evaporation.

The crops grown on the farm, are Indian corn, potatoes, hay, millet, and almost all kinds of roots, together with nearly every description of green vegetables and garden sauce known in the country, or called for in the market.

The quantity of manure used in cultivation is made to depend upon the strength of the manure, the condition of the soil, and the kind of crop which is to be raised. Generally, however, from six to ten cords of ordinary manure are put upon an acre. It is applied broadcast in all cases, and is ploughed in from six to ten inches deep. In preparing the ground for beets, parsnips, &c., the manure is first pulverized as much as practicable, and then spread uniformly over the ground. The ground is then harrowed, which not only breaks the lumps in the top of the ground, but assists in pulverizing the manure. It is then ploughed as deep as possible, twice. By this time, the manure is well mixed with the soil; it is then harrowed and bushed, and raked, until it is free from lumps. The seed is then put into the ground with a machine.

Cabbage plants, set for early cabbages, have to be examined in the evening with a lantern, in order to kill the little black worms, which will be sure to destroy the plants in a very short time, unless they are destroyed. They are also examined in the morning; and, if any are missing, they are replaced. This examination, every morning and evening, is kept up from the time the plants are first set until they are too large to be injured by the worms. Land used for beets or onions, is set to cabbages one or two years first, in order to rid it as much as possible from these worms.

Cucumbers and squashes, when first up, are kept covered a week or two, or more, with wooden boxes without bottom, with tops made of musquito netting, which allow the sun and air to come to the plants, while they preserve them effectually from the bugs. Round turnips are raised in great abundance, by being sowed upon the corn and potato fields, while the fields are in preparation for planting. They are fit for the market in time to prevent them from interferring with the crop of corn or potatoes. On most of the garden grounds, two crops are raised; not unfrequently two crops of potatoes are taken from the same

field in the same season, by planting the last between the rows before the first crop is fit to dig. No weeds are allowed to go to seed.

The average expense for manure, besides what has been made upon the farm, since it came into my possession, has, probably, been about \$75 a year. The amount paid annually for labor has been, perhaps, \$150. These statements, however, are made from memory, as no account has been kept until 1847.

The yearly produce of the farm, since 1836, has increased gradually from the value of \$100, until it amounts to nearly \$1400, as the following account, for 1847, will show. An addition of about three acres, at an expense of \$330, has been made to the farm since 1836, and it is now estimated to be worth \$3500.

Produce.

Asparagus,	.	.	.	.	\$10 00
1809 bunches of onions, at 3 cts. per bunch,	.				54 27
940 " lettuce, " "	.				28 20
557 " raddishes, " "	.				16 71
2718 " round turnips, " "	.				81 54
50 bushels of early peas, at \$1½ per bushel,	.				56 25
30 " late " at \$1 " "	.				30 00
49 " string beans, \$1 " "	.				49 00
45 " pole " \$1 " "	.				45 00
260 " potatoes, at 71 cts. " "	.				184 60
2296 bunches of beets, at 3½ cts. per bunch,	.				80 36
303 " carrots, at 3 cts. " "	.				9 09
200 doz. of summer squashes, at 10 cts. per doz.,	.				20 00
343 " cucumbers, " " "	.				34 30
808 " sweet corn, 8 " "	.				64 64
3000 heads of cabbage, at 4½ cts. per head,	.				135 00
30 cwt. of squash peppers, at 30 cts. per cwt.,	.				9 00
20 bushels of onions, at 50 cts. per bush.,	.				10 00
100 " French turnips, at 40 cts. per bush.,	.				40 00
6 " tomatoes, at \$1 " "	.				6 00
20 " parsnips, at 50 cts. " "	.				10 00
15 " flat turnips, at 33½ cts. " "	.				5 00

30 bushels of blood beets, at 50 cts. per bushel,	\$15 00
100 " Indian corn, at \$1 " "	100 00
2000 lbs. of winter squash, 1 ct. per lb.,	20 00
Melons,	7 00
10 tons of English hay, at \$15 per ton,	150 00
4 " millet, at \$12 " "	48 00
5 " low meadow hay, at \$10 per ton,	50 00
Total,	<hr/> \$1368 96

Expenses.

Paid for stable manure,	\$100 00
" " leached ashes,	37 00
" " plaster of Paris,	6 50
Value of manure made on the place,	120 00
Paid for hired help, including board,	400 00
Interest on the present value of farm,	210 00
	<hr/> \$873 50
	<hr/> \$495 46
Value of yearly improvements on the farm,	55 83
	<hr/> \$551 29

In the above account, nothing is allowed for the work of the team, as it is believed that the green corn stalks, small potatoes, tops and refuse of the vegetables, which are fed to the cows and hogs, and of which no account can be given, are equal in value to the wear of the tools and the team work on the farm—the farm work being but a small portion of the labor performed by the team.

It will be seen, by the above, that, including the improvement made in the value of the farm, the sum of \$551 29 is left to pay me for my labor upon the farm, which occupies my whole attention about three fourths of the year. I consider a rotation of crops indispensable to good culture.

SEERKONK, February 1, 1848.

DOMESTIC MANUFACTURES.

Though many elegant articles were offered, and though an improvement is observed over former years, the committee regret that the exhibition of articles of domestic manufacture still falls far short of what it ought to be, both in extent and beauty. The inferiority has, in former years, been, in part, owing to the injury to which the articles offered were exposed, from being handled. By the present arrangement, this liability is removed.

Another cause, and one which still remains, is the trifling amount of the premiums. The committee, therefore, recommend, if the funds of the society will admit of it, that double the sum at present allowed, say, one hundred dollars, be expended for this department. More valuable prizes, and separate tables for each town in the county, would call forth more competition, and be productive of the happiest results. The committee would suggest, whether a few gold and silver medals would not be a greater inducement to some ladies to contribute to the exhibition than a sum of money. It might be left optional with the recipient to take the one or the other.

By far the larger part of the articles exhibited are contributed by the inhabitants of Taunton, and the immediate vicinity. The committee account for this, on the supposition, that the trifling premium now offered does not compensate the owners for the cost, trouble, and risk, of sending from the more distant parts of the county. It is, indeed, not very flattering to a lady's taste and skill, that months of application should be rewarded with twenty-five cents.

It is feared, that the importance of this exhibition is not sufficiently considered. Needle-work, every one will admit, is an important branch of education. The needle holds a place in our domestic economy, which cannot be overlooked, and should be acknowledged.

TIMOTHY GORDON, *Chairman.*

HAMPDEN COUNTY AGRICULTURAL SOCIETY.

The annual fair of this society was held at Springfield, on the 4th and 5th days of October last. The storm that lowered so inauspiciously, seemed to have gradually worn itself out, and the clouds that wept incessantly from Sunday night, till the morning of the first day of the exhibition, drew themselves lazily away, and by noon, let in the sunshine. The forebodings of the friends of the society, in regard to this exhibition, were then partially relieved; and the spirit and interest, displayed by the farmers, ere the day wore out, removed every doubt, that, like the clouds, had hung over the day.

The fair proved much better than could reasonably have been anticipated, under the unfavorable circumstances that ushered it in. In cattle, particularly, there was a manifest superiority over the show of last year. The number was at least one third greater, and the character of the animals drew admiration from every intelligent observer. The entries of working oxen this year, were 34 against 24 of last; of bulls, 7 against 9; of steers, 41 against 12; of fat cattle, 9 against 5; of swine, 13 against 14; of sheep, 7 against 10; of heifers and milch cows, 23 against 25.

Two pairs of fat cattle entered by George Taylor, of Westfield, weighed 4350 and 4300 lbs., respectively, the former being eight years old, and the latter seven. Two other pairs, aged five and eight years, entered by his brother, Hezekiah Taylor, weighed respectively 3700 and 3800 lbs. A pair of three years old steers, belonging to Capt. Morgan, of Longmeadow, attracted considerable attention, since they each weighed about 1600 lbs., and measured seven feet in girth. They were raised in Belcher-town.

The ploughing match, in the afternoon, surpassed that of

every previous exhibition, in every essential particular. There were fifteen competitors, more than ever before, and the work was performed excellently well, to the admiration of the crowds who witnessed it. Four of the teams were oxen, and the rest horses.

The show at the hall was quite attractive, and embraced some very beautiful articles, but was less extensive than on preceding years. The greatest diminution was in domestic and fancy articles, while, in vegetables, mechanical productions, and the products of the dairy, there was as extensive a display as ever. The vegetables excelled, both in number and character, any similar collection ever witnessed here. The whole number of entries in this department was 61, (last year but 45,) each entry embracing several and often very many different articles. Of fruits, there was a large and excellent variety.

The weather continued favorable during the second day, and its effect was manifested in a largely increased attendance from the country. Our streets were crowded during the whole day, yet there was no noise or confusion. Every thing was pleasant, peaceable and quiet. *These are the gratifying characteristics of this annual festival.* It is an eminently *social* gathering, to which all ages, and both sexes come, and in which all can participate, not only with pleasure, but with profit. Aside from the more direct objects and effects of the society's meetings, we would have them cherished for this alone. The kindly influences exerted, and the social spirit inspired on such occasions, are of themselves worth all the pains taken to get up the exhibitions. It is this view of the subject, that should secure, in behalf of the prosperity of the society, the efforts of all classes and all occupations.

The show of horses very much exceeded any former one. We do not believe there is a county in the State, where there is more ambition in the way of horses, than in this. Carriage and work horses were very numerous, and looked well. Nineteen pairs, in different vehicles, came together from West Longmeadow.

The address was delivered by the Hon. John Mills, the president of the society. He spoke of the agricultural fair for this year, as, in all respects, superior to what had been anticipated after

the unfavorable weather of the fore part of the week, and as superior, in many respects, to the exhibitions of previous years. He called in question the correctness of the popular notion, that agriculture is in its infancy, and doubted whether science would ever be able to reveal many of the secrets, or teach many of the curious and useful lessons which have been predicted. While science has been of great service to the cause of agriculture, and is destined to be of great service hereafter, the farmer must rely more on his powers of observation and discrimination, than on the theories derived from books.

He offered three practical suggestions for the consideration of the farmers of Hampden County :—

1. That they should change the Merino, or half breed Merino sheep, for some breed that would make a better quality of meat.

2. That more attention should be given to the culture of fruit. Peaches will, perhaps, in two or three years, be produced in such quantities, that the supply will equal the demand, but no fears of this kind can be entertained in regard to other kinds of fruit. On the mountains, the idea has become prevalent, that the apple cannot be produced there to advantage, but this is a mistake.

3. More ground should be given up for woodland. A regard for the beauty of our scenery, and to utility, demands that this should be done. Much of our pasture and plain land might, as well as not, be appropriated to the raising of wood. From the ground that was left, after appropriating all that is proper for this purpose, our farmers would raise more than they now raise from the whole, and, in twelve or fifteen years, the land thus appropriated would be well stocked with wood.

Mr. Mills congratulated the farmers of Hampden, on the prospect before them. The growth of population in Springfield, and at the "New City," would be so rapid for years to come, that our farmers could find a good market for all they could produce, and their farms would never be worth less than they are now.

In conclusion, he compared agricultural with other pursuits, and said that, in his opinion, the farmer's life afforded more means of enjoyment, and was more free from care and anxiety, than any other avocation or pursuit.

The following report of the directors is the only report that accompanies the returns of this society, excepting the awards of the premiums.

RECLAIMED SWAMPS, AND GRAIN AND ROOT CROPS.

The directors regret that so few have taken advantage of the liberal offers of the society; yet they feel assured that there are efforts being made in all parts of the county, to render productive, lands that have heretofore been of little or no value. And also, that our farmers are beginning to understand the true value of labor, and are applying their labor and fertilizers in such a manner, as to tell more effectually upon their crops.

There were three applications for premiums on reclaimed swamps, one of which, (being less than an acre, and therefore not within the rules of the society,) the directors did not examine. Those lands owned by Ephraim Fenton, of Brimfield, and Joel M. Lyman, of Wilbraham, were examined by them, and they found that Mr. Fenton's improvements, covering from two to three acres, were of a superior character. His work is not only done, but well done; his swamp being very soft, it was necessary to cover it to the depth of about twenty inches, to make it firm. The labor having been done in winter, and the earth to be removed being upon the margin of the swamp, the cost of improvement was comparatively light. Mr. Fenton estimates it at twenty-five dollars per acre, but the directors think that it would not be safe to make calculations from that estimate. They award to him the first premium of six dollars.

Mr. Lyman has made valuable improvement on about three acres, and the result may be equal to that of Mr. Fenton, but the present appearances are not so favorable. Estimated cost of improvement, twenty-five dollars per acre. The second premium of four dollars is awarded to him. There are many farmers in the county, who might receive valuable information, by visiting either of the above farms.

Wheat. Horace Smith, of West Springfield, presented a

statement of a crop of wheat, raised by him on four acres of land; the yield was one hundred and twenty bushels, (weighing sixty-three pounds to the bushel,) or thirty bushels per acre. The first premium of four dollars is awarded to Mr. Smith.

Carrots. R. S. Merrick, of Wilbraham, was the only applicant for premium on the carrot crop. The quantity of ground was one fourth of an acre, and the yield 145 bushels. Cost of raising, \$29 00; value of crop, \$60 50. To Mr. Merrick is awarded the premium of two dollars.

Potatoes. Alexander Day, of West Springfield, states that he raised 140 bushels of Carter potatoes on 70 rods of land. Cost of raising, \$26 87; value of crop, \$98 33. A premium of two dollars is awarded to Mr. Day.

AARON BAGG, *Chairman.*

BARNSTABLE COUNTY AGRICULTURAL SOCIETY.

This society held its annual cattle-show and fair at Barnstable, on the 25th of October last. The weather was pleasant; and the crowd of people in attendance, the number and variety of stock and productions offered, proved that an increased interest was felt in the occasion. It is a subject of regret, that the statements of many of the claimants for premiums are not more minute, and the reports of many of the committees so full as is desired. It is confidently believed, that, by a little extra exertion by the officers of the society, the evil may be obviated.

No address was delivered before the society.

IMPROVED WET MEADOWS.

The first premium of \$6 00, was awarded to Loring Crocker, of Barnstable.

The second premium of \$4 00, to William Howes, of Dennis,

Loring Crocker's Statement.

The land on which I claim a premium contains between two and three acres of salt and fresh meadow or bog land, producing originally rushes, flags, and wild grass, of little value. In 1842, I enclosed the same by a dike, ten feet wide, and about three hundred feet long. I built the dike by driving stakes or small piles into the meadow, on each side of the dike, and by nailing boards and plank on the inside of the piles, to the average

height of five feet, and then filling the space between the boarding with marsh sods, taken from the salt marsh below the dike. I then cut a ditch through the centre of the meadow, and let the fresh water off through a plank drain under the dike, (eight by ten inches in the clear,) with a clapper on the outer end, hung with copper hinges, with five pounds of lead attached to the bottom of the clapper or gate, to make it close on the first flow of the tide. I then dug several ditches to cut off the numerous springs, and filled most of them with small stones, to within six or eight inches of the surface of the ground, and then covered the stones with sea-weed, and then with sand. In the fall of the same year, I ploughed a side-hill, adjoining the premises, heaped the soil in ridges, about 30 feet apart, and covered the hill with sea-weed, to keep out the frost. When the meadow was frozen sufficiently to bear a horse and cart, I dug off the hill nearly level with the meadow, and replaced the soil, and covered about one and a half acres with sand, from six to eight inches deep.

In the spring following, I sowed it with oats, herds grass, red-top and clover seed; harrowed in the oats, and covered the whole with manure. The season for oats was unfavorable, but the grass seed took finely. In the summer of 1844, I cut about three tons of good English hay, where formerly nothing grew but rushes, flags, and wild grass of little value. In December of that year, in a violent storm, (the filling of the dike being nothing but marsh sods, which had become very light,) the tide and wind cracked off the meadow, even with the planking, in the centre, and the water broke under the dike, six or eight feet below the surface, and brought up wood and stumps of trees, that were not known to have been there before. The salt water covered the whole meadow, from two to five feet deep, and the tide continued to flow over it, but at a less depth, for more than a week. On the receding of the tide, the planking and piles settled in some places, nearly level with the meadow.

I repaired the dike by driving down piles from five to six inches in diameter, and fifteen feet long, and planking as before. I then filled up the dike with sods as before, and covered the

whole with sand and stones, to the depth of one foot, and have since used it for a road. But believing it still insecure, the present season, I commenced ten feet below the dike, and laid up a row of large marsh sods, the grass side outward, on a slope of nearly forty-five degrees, and carried it up seven feet high, filling in the space between with marsh sods. This method, I believe to be preferable to any wood work, as the sods will soon grow firmly together, and will not, like wood, be liable to decay. After I had repaired the dike, I flowed the meadow with fresh water, for several weeks, and cut as good a crop of grass, as the year previous, estimating it at three tons to the acre.

In the winter of 1846, I covered the remaining portion of the meadow with from two to three inches of sand, and sowed the same with oats and grass seed, and covering the same with manure. The present season, I have cut, on half an acre, two tons of excellent hay, some of the herds grass measuring four feet eight inches in length. I believe a smaller quantity of sand to be far preferable. I believe that, if the surface of the meadow could be pared off to the depth of one or two inches, to destroy the original grasses, and seed sown directly upon the surface, and covered with a coat of manure, it would be the best method that could be adopted. I tried the experiment by sowing herds grass seed upon some sods taken from the ditch to fill up a low place in the meadow, and, without any manure, the grass grew the following season about three feet high. The only obstacle to reclaiming low wet meadow, is the subduing of the original grasses, and more particularly the round and three square rush. A larger quantity of sand will keep all but the round rush down, and the best method I am acquainted with, for subduing that, is thorough draining and good stable manure. The cost of reclaiming may be variously estimated, but will be, I think, from twenty to fifty dollars, according to the facilities for improving.

During the past summer, after I had cut the English grass, the weather being uncommonly dry, I put a stopwater on the trunk leading under the dyke, and, for several weeks, kept the ditches filled with water; and by this method I had an abundance of grass for two cows, during the whole dry season, while

the grass, on all the high land, was entirely dried up. I also had a piece of corn growing within five or six rods of the meadow, which was materially benefited by retaining the fresh water within the dyke. My meadow is so situated, that most of the water passes off through the centre ditch, but, in ordinary cases, it is best to cut a ditch round the meadow, to intercept the springs from the upland.

BARNSTABLE, Oct. 25, 1848.

PRODUCE.

The Committee, (MELATIAH BOURNE, *Chairman*,) award to Braley Jenkins, Jr., of Barnstable, for the best conducted experiments on Indian corn, first premium, \$6 00, and a copy of the Farmer's Dictionary.

To Russell Hinckley, of do., for next best, second premium,	\$4 00
To Enoch Shove, of Sandwich, for potatoes, gratuity,	1 00

Braley Jenkins's Statement.

I offer for premium, a crop of Indian corn, grown on one acre of land, and measuring 87 bushels and 31 quarts. The land is mostly a drained swamp, the soil being a brown sand, with a peat subsoil. The land has lain in grass for twenty years past, producing about two tons of English hay yearly. Ten horse loads of manure were spread on the sward; it was then ploughed, and forty loads of compost manure harrowed in. It was planted May 20th; the corn was worked out three times each way, with the cultivator, and hoed twice. Six horse loads of manure from the hog-pen were put in the hills. It was harvested and measured October 24th.

I estimate the cost of cultivation as follows:—

Ploughing,	\$3 00
Fifty-six loads of manure,	15 33
Hoeing and cultivating,	7 00
Harvesting,	12 00
	<hr/>
	\$37 33

BARNSTABLE, Oct. 25, 1848.

Russell Hinckley's Statement.

I offer for premium two acres of Indian corn. The land is a sandy loam, and produced, the year previous, from one to two tons of English hay to the acre. On the two acres, 125 ox-loads of manure, (of thirty bushels each,) were carried and turned under to the depth of four inches, and the ground was harrowed three times. The corn was planted about the 9th of May, three feet and a half one way, and two feet the other; two corns were left in the hill. It was worked out crosswise, only with the harrow, and hoed three times. From one acre I harvested sixty-five and a half bushels of corn, and from the other sixty-four.

MARSTON'S MILLS, Oct. 25, 1848.

Enoch Shove's Statement.

Having, for some years, been convinced, that too much seed is injurious to the growth of the potato, I this year resolved to test its certainty by experiments. For this purpose, I selected two pink-eye potatoes, that might probably weigh about four ounces each, and, having cut them so as to retain one eye on each piece, I planted them in my garden, (a light sandy soil,) about the middle of May, putting two pieces and a spoon-full of plaster in each hill. Notwithstanding the extreme drought of the past season, which, for some time, seemed to suspend vege-

tation, I dug from them, October 8th, ninety-two and a half pounds of good size potatoes, some of them unusually large.

EAST SANDWICH, Oct. 25, 1848.

CRANBERRIES.

For the best experiment in the cultivation of the cranberry, on not less than one quarter of an acre, there was awarded

To Edward Thacher, of Yarmouth, first premium, . \$5 00

For the best experiment on not less than two rods,

To Walter Crocker, of Barnstable, . . . 1 00

To Leonard Lumbard, of do., for specimens of cran-
berries. 1 00

Edward Thacher's Statement.

The cranberries I enter for premium were raised by me on one quarter of an acre of swamp land, covered with sand about four inches, at an expense of about twenty dollars for sanding, setting and hoeing. The vines were set last year, from selected fruit. I have picked one bushel and a quarter of fine cranberries, from the same lot this year.

YARMOUTH, Oct. 25, 1848.

Walter Crocker's Statement.

The two rods of cranberry swamp, on which I claim a premium, has been reclaimed from an almost barren state, to its present productiveness, by means of thorough draining in summer, and flowing the same in winter.

The produce of the above two rods of land, the present season, was two and a half bushels of cranberries.

BARNSTABLE, Oct. 25, 1848.

ABSTRACT OF PREMIUMS.

ABSTRACT,

Showing for what objects Premiums were offered by the several Agricultural Societies in 1848, and the amounts of the same.

SOCIETIES.	Bulls.		Milk Cows.		Heifers.	Working Oxen.		Greatest number of pairs of Working Oxen from any town.	Stoers.	Fat Cattle.		Horses and Collis.		Sheep.	Swine.	Poultry.	Ploughing—double teams.		Ploughing—single ox teams.		Ploughing—horse teams.		Ploughing—with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Management of Farms.	Reclaiming Wet Meadows.	Reclaiming Waste or Barren Land.	Subduing Bushes in Pastures.	Exterminating Weeds in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a Manure.	Preparation of Compost Manure.	Application of Compost Manure to Mowing Fields.	Application of Sea Weeds.		
Essex.	25	52	50	40		39	56	28	31								28	20	20	20					25	55	45											
Middlesex.	20	21	30	30		29	14		30								28	28	28	28							72	40					15					
Worcester.	25	35	56	43		62	75		35	14								55																				
Hampshire, Franklin, and Hampden.	28	14		30	53	21	20	76	12	12	10											46			10		10											
Hampden.	20	25	19	30	32	31	25	54	24	26												27	27	6	45	10	10											
Berkshire.	25	42	21	54		32	12	48	49	26												28	28															
Plymouth.	17	18	27	20		24	28															42			16	60	25		16									
Bristol.	44	28	14	22		26	23	8	10	18												9	20	9														
Barnstable.	20	20	10	27		11	22	51	11														35															

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SOCIETIES.

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ABSTRACT,
*Showing for what objects Premiums and Gratuities were AWARDED by the several Agricultural Societies in 1848, and the amounts of the same.**

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town.	Steers.	Fat Cattle.	Horses and Cols.	Sheep.	Swine.	Poultry.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Management of Farms.	Reclaiming Wet Meadows.	Reclaiming Waste or Barren Land.	Subduing Rushes in Pastures.	Exterminating Weeds in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a Manure.	Preparation of Compost Manure.	Application of Compost Manure to mowing fields.	Application of Sea Weeds.
Essex, . . .	\$25	\$52	\$46	\$40	.	\$50	\$49	\$37	\$9	\$26	.	\$28	\$20	\$18	.	.	.	\$35	\$45	.	.	.	.	.	.	.	.	.
Middlesex, . . .	18	27	30	30	.	18	14	.	.	24	.	28	28	28	.	.	.	35	40	.	.	.	.	.	.	\$15	.	.
Worcester, . . .	25	35	57	45	.	62	65	.	21	35	\$13	.	55	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hampshire, Franklin, and Hampden, . . .	28	14	3	30	.	29	20	78	11	15	10	.	.	.	\$46	.	.	.	10	.	.	.	.	.	.	.	.	.
Hampden, . . .	18	28	20	38	\$35	35	23	80	5	20	.	.	.	.	30	.	.	.	10	.	.	.	.	.	.	.	.	.
Berkshire, . . .	22	36	27	54	.	32	5	45	40	26	.	.	25	28	.	.	.	.	.	.	.	.	.	.	.	.	24	.
Plymouth, . . .	17	18	23	20	.	22	28	.	.	.	.	.	44	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bristol, . . .	42	28	22	34	.	17	25	12	10	18	1	11	23	10	.	.	.	15
Barnstable, . . .	22	.	8	27	.	10	28	31	11	2	35	.	.	.	10	13	.

ABSTRACT OF PREMIUMS.

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ABSTRACT—Continued.

SOCIETIES.	Butter.	Cheese.	Honey.	Maple Sugar.	Grain Crop.	Root Crop.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Cranberries.	Forest Trees.	Trees set on the Road-side	Fruit Trees.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and val- uable Grasses.	Comparative value of Crops as food for Cattle.	Fattening Cattle and Swine	Experiments to determine proper time to cut Forest Trees which shoot from the stump.	Implements and Inventions.	Agricultural Essays.	Domestic Manufactures.	Whole Amount.	
	\$42	\$8	.	.	\$8	\$6	.	.	.	\$49	.	.	.	\$10	\$5	.	.	\$4	\$30	\$99	\$741
Essex,	54	.	.	.	52	10	.	66	540
Middlesex,	9	.	.	.	8	6	486
Worcester,	20	35	.	.	.	18	412
Hampshire, Franklin, and Hampden,	8	7	.	.	5	6	\$5	.	.	24	.	.	.	.	.	.	.	.	.	.	.	.	64	500
Hampden,	21	15	.	.	4	4	.	.	.	42	.	.	.	.	.	.	.	.	.	.	.	.	72	676
Berkshire,	15	18	.	\$5	118	25	.	.	\$6	11	.	.	.	.	.	.	.	.	.	.	13	.	116	507
Plymouth,	33	18	.	.	52	23	12	.	.	34	.	.	.	.	.	.	.	.	.	.	12	.	127	463
Bristol,	21	12	\$9	.	10	4	.	\$5	.	28	.	.	\$5	.	.	.	.	.	.	.	.	.	101	293
Barnstable,	10	9	.	.	22	2	4	.	.	13	.	.	.	6	.	.	.	.	.	.	2	.	28	\$4619

* Agricultural publications were also offered and awarded, as premiums, by most of the Societies.

SELECTIONS FROM ADDRESSES
TO
AGRICULTURAL SOCIETIES.

HOW TO MAKE FARMING PROFITABLE.

[Extracts from an Address by JOSIAH NEWHALL, Esq., at the last Fair of the Essex Agricultural Society.]

BUT a few years since, under the old system of agriculture, farmers became discouraged, believing that the land had become exhausted, that its cultivation would no longer afford a living, much less a profit, and some saw no alternative, but a removal to the fertile prairies of the West. The complaint is frequently reiterated, that farming affords but little profit; that not much more than a living can be obtained. This, in many cases, is but too true; but an examination into the mode, by which the business hitherto has generally been conducted, will explain the reason. Every man knows, that to encourage the growth of an animal, he must supply it with food, and, to make it profitable, he must supply it liberally. Between the animal and vegetable kingdom, there is a striking analogy; although the difference between a sentient and a vegetable being is great, still, in relation to food and growth, life and death, there is much similarity. Withhold food from either, and death is the consequence. A man might as well hope to rear his domestic animals with food barely sufficient to keep them alive, and expect them to be profitable, as to attempt to grow rich harvests, without supplying, where needed, the necessary food for the growth of his plants.

Farming may be so conducted as to be made profitable, or merely to afford a living, or to run out the farm. Taking the land as it averages in the State, this depends more on the farmer than on the soil. The man, who makes no provision for the raising of his crops, cannot reasonably expect any. Agriculture, like all other business, to be made profitable, must be conducted with some method as well as energy. What would be thought of the merchant, who should neglect to load his ships, and let them lay deteriorating at his wharf, or send them to sea half loaded or manned, and without funds for a return cargo; or the manufacturer, who should run his machinery without system or order, and let it stand still upon every trivial occasion, while the pay of his operatives was going on? Would not such a course bring irretrievable ruin? And can the result be more favorable to the farmer, who, though possessing hundreds of acres of land, upon which he is annually paying taxes, makes no adequate provision for the cultivation or improvement of it, with the exception of a few acres, and that cultivated in such a manner as not to afford a compensating return for the labor bestowed. Although the soil in some parts of the county is gravelly or sandy, still it may be made to produce rich harvests. The farmers have, within their reach, ample resources to convert their lands to a state of great fertility. The farmers of no section of the State are more highly favored in this respect. On the eastern border of the county, the broad Atlantic rolls in upon the beaches her fertilizing materials in great abundance. Upon the rocks, between high and low water, grow weeds, containing the elements of vegetable nutrition in a high degree. At some seasons of the year, a certain kind of fish may be taken along the shore, with seines, in great quantities, and be made valuable in the formation of compost, or in the direct application to the land. The bays and inlets along the coast abound in beds of muscles, of great value; and, in different sections of the county, there are vast deposits of peat, amounting, in the aggregate, to many thousand acres. Providence seems to have made ample provision by these bogs for the fertilization of the soil for ages to come. While, in tropical climates, the decay of vegetable matter is complete,

and becomes resolved into its original elements, in this temperate region the process is less rapid, and, in certain situations abounding with water, the decomposing process is arrested, and peat accumulates. In this situation, it abounds with acidity, and is inert when applied as the food of plants. Within a few years, peat lands were considered among the least valuable, having been sold from five to ten dollars an acre, while their intrinsic value is hundreds, nay thousands of dollars, for the purpose of manure; to say nothing of their value as an article of fuel, some of which is but little inferior to coal. This substance, to be rendered available in agriculture, should be dug in the autumn, and exposed to the ameliorating influences of the atmosphere during the severity of the winter. Farmers, having barn cellars, (and none should be without,) will find, that, by using this material largely under their stables, to absorb the liquid and mix with the solid deposits of their animals, they may double or triple the amount of their manure, and the quality will be far better than that not protected from the wasting influence of the elements. The whole may be well mixed, and suffered to ferment so far as to expel any remains of acidity, and the whole mass becomes equally valuable for all thin and gravelly soils as clear animal manure, and having a more permanent effect.

The intelligent farmer now regards the atmosphere as the vast magazine and storehouse of those materials from which the organic parts of all animal and vegetable life is, or has been, derived. He sees by chemical light, the invisible carbonic acid elaborated and assimilated to the different forms of being; and he knows, that, from the soil, the inorganic portion of the vegetable frame is obtained. And, in the wondrous round of growth and decay, he perceives that nothing is lost on the dissolution of organized life. One portion returns to the earth, and the other to the atmosphere in the form of gas, ready to enter into new combinations of animal and vegetable life. Thus growth, decay, and putrefaction, are but links in that endless chain of motion which presents itself to view, and, in the language of the poet:—

“Look round the world! behold the chain of love
Combining all below and all above.

See dying vegetables life sustain,
See life dissolving, vegetate again.
All forms that perish other forms supply.
(By turns we catch the vital breath and die.)
All served, all serving ; nothing stands alone ;
The chain holds on, and where it ends unknown."

All plants are built up of organic and inorganic materials. Their organic portion consists of carbon, hydrogen, oxygen, and nitrogen. When any vegetable is burned, these organic substances disappear, and become converted into invisible gas, while the inorganic portions, which are derived from the soil, remain in the form of ashes. For supplying the organic materials of plants, nature has made provision in the gases of the atmosphere, which the improvidence of man can never destroy. But their inorganic portions, which are contained in the soil, and which consist, in part, of lime, soda, potash, magnesia, silicia, oxides, and sulphurets, he may so far exhaust as to reduce the soil to a state of sterility.

It should be the object of every farmer to guard against this great error, by returning, annually, to his cultivated grounds more vegetable food than was taken off by the preceding crop. Where the raising of hay is the principal object, the turning of the green sward during the latter part of summer, once in four or five years, and immediately seeding down to grass, with a dressing of compost, is not only one of the best means of obtaining good crops, but of constantly improving the soil. This mode of culture is specially recommended for all heavy soils that are unprofitable under a hoed crop.

The tendency in agriculture, when not conducted on scientific principles, is to crop the soil till the diminished harvest pays little more than the expense incurred. This has been the case in many places cultivated during a long period.

Whatever may be the state of things in relation to some portions of our country, we believe it to be a fact, that, in this densely peopled region, capital invested in the cultivation of the earth, if judiciously managed, will bring a sure and profitable return. The unwise and parsimonious course which has been pursued, in cropping the soil, till it yielded but a slight return,

has been the cause why farming has been considered unprofitable, and been neglected, for pursuits far more uncertain. The miserable policy of taking from the ground, all that can be obtained, and returning nothing, is sure, sooner or later, to end in poverty ; while a liberal return, and good cultivation, ensures an ample reward. There are farmers, or those so called, who consider every dollar expended for manure, as money irrecoverably gone, and go on to plough their exhausted fields, to plant the seed, to cultivate and hoe the puny plants, and, in the autumn, gather a harvest which scarcely pays the labor of cultivation. There are others, who go into the business with a knowledge of their profession, expend a hundred dollars per acre, for enriching materials, and gather harvests which pay twenty-five, or even fifty per cent on the outlay. Thus, while the one course is a mere caricature on farming, the other presents the subject in its true light, and demonstrates that the business, if conducted in a proper manner, is as sure of a profitable return, as capital invested in most other pursuits.

Of the various kinds of produce raised by the farmers of the county, fruit may be considered the most profitable. Of the different sorts which may be easily cultivated, the apple is undoubtedly the most important. Its cultivation is daily becoming of more interest. Not only is the home market for this fruit increasing, but an export demand increases with its cultivation. The great improvements in physical science, during the present century, have given an impetus to business unknown before. By means of steam power, the distant parts of our extensive country have been brought comparatively near, and even European markets have been brought within a fortnight's sail. The great facilities thus afforded for the exportation of articles of a perishable nature like the apple, and the high estimation by foreigners of this fruit grown in the United States, will cause a demand for exportation, which will outrun the supply, unless more attention be paid to its cultivation.

Indian corn is worthy of more attention than is usually bestowed upon it ; not only for the grain which it produces abundantly, but for the large amount of fodder, when raised for that purpose. It bears high culture, withstands the drought well,

and produces more to the acre than any other grain. An error is frequently committed in its cultivation, by removing, at the last hoeing, the suckers which spring from the root. The male blossoms on the main stock, under ordinary circumstances, do not remain in vigor more than four or five days, and frequently not so long. And this length of time is only sufficient to fertilize the earliest ears, in which the female blossoms come out first from the lowest grains, and present themselves at the ends of the corolla or husk, and, as they come out, are fertilized. Thus, they are daily presenting themselves, until the whole are fertilized. But if the heat of the weather, or other causes, destroy the male blossoms, before the whole of the female blossoms appear, then if there be no suckers to supply the fertilizing powder, a portion of the upper end of the ear will be without grain. To supply this deficiency, suckers successively spring up from the root, and afford a supply of the fertilizing material, for the ears that may be produced for two or three weeks after the main stock is dead. On the male blossoms from the suckers, therefore, the greatness of the crop very much depends.

In relation to the origin of the disease, which has so disastrously affected the potato plant, no satisfactory cause has yet been discovered. Some facts having connection with the subject, have come under my observation. One is, that the disease is not continued from one year to another, by diseased tubers; for plants which have been grown from potatoes almost entirely decayed, have produced healthy and sound crops. Another is, that new varieties produced from the seed, were even more affected by the rot, than old varieties. This, I think, goes to show that the malady must arise from some other cause, than the long-continued cultivation of varieties, without being renewed from seed.

The best means of insuring a healthy crop, is to plant early sorts early in the season. When we see whole fields struck down, in the short space of a day or two, whatever may be the pre-disposing cause, we cannot but think the disease to be of atmospheric influence. We may reasonably hope the malady will ere long pass away, and the potato again flourish with its former vigor.

Aside from the disease, I would remark, that the practice of planting the largest and over-ripened potatoes, has a tendency to enfeeble the plant and shorten the crop. While all seeds, perfectly ripened, produce the best plants, it ought to be remembered, that a potato is not a seed. While, therefore, well ripened potatoes are the finest for the table, they are the least fit to plant. A potato, perfectly ripened, has lost much of its vegetative power, and, when planted, sends up feeble shoots, and frequently produces a small crop, whereas such as have not arrived at maturity in the autumn, when planted in the spring, come up strong and vigorous plants, and produce large and better crops.

The pursuit of agriculture is not only favorable to man's physical well-being, but is eminently conducive to the improvement of his moral nature. The farmer is that favored being, who is permitted, as it were, to stand in the laboratory of the Infinite One. While many of those engaged in other useful and important occupations, are necessarily confined within the narrow limits of their study or work-shop, his office or place of business is the vast temple of nature. He seems, more than others, by his daily occupation, to be admitted to nearer approaches to Him, whose humble co-operator he is, in producing the means of sustaining life. While the artist and mechanic, by their skill and ingenuity, as they operate upon dead matter, can produce results in accordance with their wishes, he feels that, in dealing with the vital principle, without the direct smiles of Heaven upon his labors, he can produce nothing. When the rain is withheld, and the "heavens become as brass, and the earth as iron," and vegetation seems to be perishing, how often is his eye directed to the horizon, that perchance he may see, as did the servant of the prophet, a cloud rising, though not larger than a man's hand, and giving promise of the needful blessing. He beholds, therefore, with the deepest interest, the progress of vegetation, from the opening of the vernal season, to the closing autumn. When the mighty forces of nature are quiescent, he sees their silent energy in the beaming sun, and the gentle zephyr. And in their awful manifestations, he recognizes, in the lightning's gleam, the glance of that eye,

whose all-pervading sight reads the unspoken language of the heart ! And in the bursting thunder, and the fearful earthquake, he hears with awe, the accents of "the voice that shakes all nature's frame."

The volume of nature is wide spread before him ; and whatever may be the dogmas, which men may have derived from other sources, respecting the character of the Creator, he here reads in this "elder scripture," the impressive and all-subduing lesson, that God is good ; that his paternal care is extended to every creature, and that all, from man to the humblest insect, are the monuments of his exhaustless love.

THE DIFFICULTIES AND OBSTACLES TO BE ENCOUNTERED IN AGRICULTURE.

[*Extracts from an Address by HON. JOHN C. GRAY, at the last Fair of the Middlesex Society of Husbandmen and Manufacturers.*]

The first difficulties, in the way of our farmers, which I shall notice, are those resulting from our climate. This has been well described by Washington Irving, as fierce in all its extremes, but splendid in all its vicissitudes. So frequently, and so suddenly, do these vicissitudes occur, as to set all anticipation at defiance. We are tempted to think that the laws, which govern the changes of temperature in other regions of the globe, are entirely suspended here ; and had Shakspeare ever visited our shores, we might suppose that it was from our climate that he drew his beautiful picture of the disordered seasons.

"And thorough this distemperature, we see
The seasons alter. Hoary-headed frosts
Fan in the fresh lap of the crimson rose,
And on old Winter's chin and icy crown
An odorous chaplet of sweet Summer buds
Is as in mockery set. The Spring, the Summer,
The chiding Autumn, angry Winter, change
Their wonted liveries, and the amazed world
Through their increase, now knows not which is which."

It is not only from season to season, that our transitions are thus rapid ; they occur weekly, and almost daily ; so that a single day sometimes exhibits what may be called, without violence, an epitome of the whole year. But, after all, these sudden and severe changes, this fierceness of heat and intensity of cold, these rapid and violent alternations from the one to the other, however they may task the skill of the mere gardener, produce far less injury than might be supposed, in our great agricultural operations.

But there is one feature of our climate, which is a far more prolific source of anxiety to the farmer. I allude to our long droughts. These occur so frequently, I had almost said, so constantly, that a season entirely exempted from them, is to be considered merely an occasional exception. Can any thing be done to alleviate the effects of these visitations ? But little, it may be said ; yet, I think, much more than has been generally imagined. To hope to supply the want of rain by artificial watering, applied upon a scale of any extent, must, of course, be entirely out of the question, inasmuch as a single shower of one inch—and this, though a copious, is, by no means, an extraordinary shower—furnishes to an acre of land about a thousand barrels of water. We can render no assistance to our grass and English grain ; but for our trees, and for every crop which admits of culture by the plough or hoe, there is one simple expedient, which has been greatly undervalued and neglected. I mean the stirring of the soil. This practice has been scarcely noticed by agricultural writers. I find no mention of it in English books ; perhaps, because, in Great Britain, a drought is comparatively a rare evil ; and the first publication I have seen upon the subject, is a communication by the late Mr. Lowell, to the editor of the *New England Farmer*. It seems probable, that when the earth is loosened, and its pores laid open, it acts like a sponge, in absorbing moisture from the atmosphere ; but whatever the mode of operation, the fact is certain, that, by repeatedly stirring the soil in dry weather, a moisture on the surface is invariably produced, and any one may satisfy himself on this point, in a few minutes. An intelligent farmer, in my neighborhood, once stated, that, in sowing

his turnip-seed, he always followed the rule, of the 25th of July, wet or dry; and, on being asked what course he took, if, as frequently happens, a severe drought prevailed at that time, answered, that he ploughed the land till he raised a moisture. If the stirring of cultivated ground were perseveringly followed, at short intervals, in our summer droughts, the effect would be far more striking, than any one, previous to such an experiment, could easily imagine; and the plough and hoe, in addition to their other most valuable qualities, would prove, so to speak, no ordinary watering-machines.

The soil of Massachusetts has, certainly, for the most part, no pretensions to the character of great natural fertility. Its virgin richness, such as it was, has long since been exhausted. But, in truth, there is no evidence that this richness was ever more than moderate, and earlier writers speak of our land in much the same terms as would now be employed by a discriminating observer. It is, therefore, of the more importance, to increase this natural wealth, by skilful culture and nourishment, and, most especially, to observe the greatest care in a rigid economy, and judicious application of manures. This subject was treated with great ability, and with the utmost directness and perspicuity, by the late Col. Pickering, in his address, delivered about twenty-five years since, at Brighton, and published in the *New England Farmer*, to which I refer for full information.

The health of our domestic animals is a topic on which, from its high interest, I feel compelled to detain you for a moment. It is a topic on which no good farmer, I might add, no good man, can well be indifferent. Our climate seems, on the whole, highly favorable to the health of these animals. Still, as they are, of necessity, liable to various diseases and accidents, every thing relating to their physiology must be highly interesting. It is a dictate, not only of economy, but humanity, that these casualties should be fully understood, and nothing should be left undone to remedy or to avert them. With regard to the first of these, that is, the curing of diseases after they have once appeared, our power, at best, is exceedingly limited. Little can be done to assist nature, and, perhaps, we best discharge

our duty, by interposing as little as possible in her operations. NAPOLEON, no mean authority, certainly, in point of intelligence, repeatedly declared, in his last illness, his distrust of all medical prescriptions, as applied to the human subject. "Doctor," said he, to his favorite physician, "no drugs! You are like a watchmaker, who should endeavor to put a watch in order which he could not open. For once that he could effect any good purpose by thrusting in his crooked instruments, he would a thousand times break or derange some part of the hidden machinery." I shall, certainly, not presume to say, that these remarks of Napoleon admit of no qualification. If we should hesitate to decide where doctors disagree, much more should we hesitate to dogmatize where doctors might unite against us. But if we are greatly in the dark, as to the operations of nature and of disease in the human frame, and I suppose no candid physician would deny thus much, far more obscure must be our course in treating the diseases of animals, especially as they have no tongues to express their own sensations. Their anatomy is a subject which well deserves the attention of the medical faculty, and with which every farmer should be, in some little degree, acquainted. And yet, there are few subjects on which our information, written and unwritten, is so little reliable. The greatest evils which disease often brings upon our cattle, are the useless, aye, and tormenting, prescriptions to which these poor creatures are sometimes compelled to submit. Compared with such treatment, utter neglect is merciful, and our cattle have certainly a right to ask that nature should have fair play, in working out her own beneficent ends, or in submitting, quietly and peaceably, to inevitable necessity. Some of our most distinguished surgeons, greatly to their honor, have applied themselves, with deep interest, to the study of comparative anatomy, and the Massachusetts Agricultural Society are now endeavoring, with a good prospect of success, to induce some young physician to devote himself entirely to this most important and most neglected pursuit. Still, where we have the option, it is far better to avert disease than to combat it, and much may be done, in this way, by every vigilant farmer. "In all, let nature never be forgot," was the pre-

cept of the poet, in ornamental matters ; and, in what are called more useful ones, there is no safer rule. Let us treat our cattle as well as we can, lodge them comfortably, feed them generously, with their natural sustenance, keep them neat, avoid undue exposure, and govern them in a spirit of kindness and good humor, and we shall leave little foot-hold for disease, and few occasions for the science of the cattle doctor.

I have thus spoken very briefly of a few of the difficulties with which our farmers are called to struggle. Of many others I have not time to speak, however slightly. I shall mention only one more obstacle to agricultural improvement, not peculiar to us, but existing, with very few exceptions, in all countries with which we are acquainted ; and this is the fact, that instruction in the elements of agriculture makes no part of our systems of early education. I do not mean to claim for this science a leading place in those systems. I am far from wishing, for instance, to give it that predominance, which our highest seminaries have united in assigning, and most wisely, in my humble judgment, to the classics and the exact sciences. To invigorate and discipline the intellect is of as much moment, as to store the memory. We are not lightly to disparage those systems of regular education, which, it is apprehended, have most clearly proved their merits by their fruits, and which have found no warmer friends, or more liberal benefactors, than among men, whose intellectual, like their material wealth, has been gained with scarce any instruction or assistance from without, by their own vigorous capacities and constant industry. But the degree of instruction in the great principles of agriculture, which I am recommending, requires no such long course of study. It might be given in a series of lectures, which could easily be composed and delivered in a single summer, by any one, possessing, in any considerable degree, that combination of genius, of easy and elegant composition, and of practical knowledge of agriculture, so conspicuous in JEFFERSON, in PICKERING, and in LOWELL, to say nothing of other writers, among the living or the departed. Such a course has been actually given in Edinburgh, by Prof. Low, whose work on that subject, in a single volume, combines more of the desirable qualities of

a Text Book on Agriculture, than any with which I am acquainted.

We know, that scarcely ever will a taste of any kind develop itself in the human mind, unless its seeds are sown there in early youth, and how many of our most able and accomplished young men might become the votaries or friends of agriculture, or horticulture, were their attention called to these subjects at a season when the intellect is awake to every object; and the feelings susceptible to every impression.

This is a proper occasion to pay the tribute of a passing notice to the memory of some of those distinguished men, who, for a long period, proved themselves most enlightened and constant friends of agriculture, by their example and their writings, and who have been, for years, removed beyond the reach of human applause. It is unquestionably to the influence exerted by such men, that our agriculture is greatly indebted for its present advanced condition, and this probably to a degree far higher than can be estimated; for what earthly sagacity can trace or limit the action of truth, when once cast abroad by a powerful and eloquent mind, into the great world of intellect. Of these departed friends to this great interest, I have room to speak only of very few of the most distinguished.

WASHINGTON gave abundant proof, in his life and writings, of his deep and abiding interest in the cultivation of the soil, his comprehensive views of the agricultural resources of our country, and his sagacious foresight in pointing out the internal communications which would best call those resources into full and vigorous action. There is equal evidence, that his example, as a farmer, was in keeping, in every way, with his course, in all those high spheres of action, to which, for our best good, as well as for his own undying memory, it was the pleasure of Providence to call him. The vigilance, the comprehensiveness of plan, yet exactness of detail, the mixture of energy and caution, of reflection and activity, by which he was so singularly marked in his public conduct, were as strikingly and constantly displayed in his agricultural operations. Had he written at large upon agriculture, there is no reason to doubt, that he would have displayed the vigor of thought, and the simplicity, perspi-

cuity and neatness of language, which have given him, as a mere writer, no mean rank in the literary world. But his general observations on agriculture are few, not sufficient in amount to entitle him to the name, in any usual sense of the words, of an agricultural author.

The remarks of JEFFERSON on agricultural subjects are, I need not say, expressed with the clearness and elegance of every thing which proceeded from his pen; but they are scattered in different parts of his correspondence, and incapable of being embodied in any regular essay. There is evidence everywhere of a preference for the country and for rural life, which seems to have been in no degree quenched by the large share he took in every important branch of political and literary inquiry. Though he can scarcely be called an agricultural writer, he is entitled to high distinction, as a friend to agriculture, from the improvements which he made in the construction of the plough. This most important of all instruments has been used in the old world for thousands of years, and yet there are good reasons for believing, that it has been more essentially improved, within the last half century, than in all past time. Look at the plough used by old ROGER SHEERMAN, side by side with the improved ploughs which you are now driving, (and this some of us have actually done, a very little time since,) and you might suppose that scores of centuries had rolled away in the interval. Now the person who first, at least in this country, gave to this subject its due share of attention, was JEFFERSON. More than fifty years ago, he was intensely occupied in contriving a mould-board of the least resistance, an object, of which the consequence is self-evident to every farmer. I have the authority of a French standard work of the highest reputation, for saying, that JEFFERSON was the first who ever gave any formula, by which the proper curve could be given to this important part of the plough, and thus established a fixed rule for what before was a matter of mere imitation, I had almost said mere accident!

The two friends of agriculture, whom I shall now mention, were highly honored citizens of our own State, men who wrote much and well on agricultural subjects, and who manifested their knowledge and their interest in them, by able and valuable addresses, delivered within the limits of this county.

The first of these was the late Colonel PICKERING. No writer on these topics, in this or any country, has written with more practical good sense, and philosophical power of generalization. His address at Brighton, to which I have already alluded, is, in fact, a most valuable treatise on the whole subject of Massachusetts agriculture, and comprises information on the most important topics, which no ordinary mind could have condensed in the same compass. He also wrote largely in other essays, on the much vexed question, on the importation of foreign animals, and on forest trees, and contributed materially to the documents of the Agricultural Society of Essex County, over which he presided for many years. Colonel PICKERING was not an impassioned, nor perhaps a highly elegant writer. But his style was marked by great neatness and precision, concise almost to a fault, but yet free from obscurity, plain and sometimes homely, but always natural, grave, and suited to his subject. His mind was uncommonly searching and logical, and he seldom took up a topic without nearly exhausting it, and leaving little to be said, at least on his own side of the question. His writings, if collected, would form a most valuable body of agricultural information, and I believe our enlightened farmers, generally, would feel called upon to differ from very few of his conclusions. His interest in agriculture, as well as his intellectual vigor, continued to the end of his long life, and the last time in which he appeared in any way before the public, was in the delivery of an agricultural address to the society of his native county, about three months before his death.

There is no friend to Massachusetts agriculture, who will deny that it has been deeply indebted to the writings and personal influence of the late Mr. LOWELL, of Roxbury. This gentleman was long known and respected among us, and distinguished for his warm and liberal feelings, his powerful and acute powers of reasoning, and his copious natural eloquence. He wrote much in his early days, on questions on which the honest and intelligent men of his time were greatly divided in opinion, and which are now of little moment, except as mere matters of political history. But, for the last twenty years of his life, his pen was devoted almost exclusively to agricultural subjects. On these

subjects he wrote more perhaps than any man of that day in the Commonwealth, if we except the lamented Thomas G. Fessenden. Mr. LOWELL was the chief support of the periodical work then published by the Massachusetts society, (over which he presided,) and more than once addressed that society at the public shows in Brighton. He entered upon the discussion of agricultural questions with the same intelligence and frankness, the same sincere, if not always successful, desire to arrive at a correct result, which have marked his productions on other topics. As a writer, he was unambitious, not to say careless, in respect to mere finish and ornament, but he always wrote with the greatest simplicity and earnestness, and there was such an evident knowledge and interest in his subject, such a copiousness of illustration, and easy flow of language, so much of that which reaches the heart, because it comes from the heart, that I know of no agricultural author, better entitled to the character of an impressive and interesting writer.

The great men, whom I have mentioned, were, as you know, not distinguished as farmers merely. They were deeply engaged in political questions, which were never more agitating than in their day, and on many of these questions differed widely from each other. But their political friends and foes could bear witness, that neither of them carried his party feelings into his agricultural investigations. Here, to borrow a happy phrase of Jefferson on another occasion, they were "all Federalists, all Republicans," all warmly interested in the subject, all governed by feelings of patriotism and philanthropy, all anxious to improve our agriculture, and promote the prosperity and well-being of our great rural population. Men of their comprehensive minds could not fail to appreciate this object. If the greatest poet and brightest genius of ancient Rome, in a panegyric on rural life, to which two thousand years have failed to produce a parallel, could ascribe the unequalled greatness of his country to the domestic virtues, which cluster round the farmer's dwelling, with how much more reason must we look to that spot for the security of our best interests, under the influence of a purer faith, and of a general system of moral and intellectual education, of which the ancient world scarcely dreamed !

The greater part of our population must always be rural, and to every enlightened lover of his country, the occupations and happiness of the farmer must be matters of deep and abiding interest. I have no time to speak of our political and social institutions, in a way becoming the subject. Nor is it at all necessary. Whatever we may think on other matters, I am persuaded that there is no diversity of opinion among us, as to the great political and moral principles which lie at the foundation of our existence as a people, and by the observance or neglect of which we are to become the model or the by-word of the nations. We may differ on many questions not unimportant, but I am satisfied that the rent never descends to the foundation; I am sure that I speak the sentiments of all of you, in saying, that the threefold cord, which is to bind us together as a free, enlightened and happy community, must be that woven by the combined influence of the SCHOOL, the CHURCH, and the FIREMAN. But to a complete and enlarged patriotism, I think it desirable, if not essential, to possess a just appreciation of the material resources and natural scenery of our native home, a deep-felt interest in its very soil, a wish, if possible, to leave impressed upon it some lasting token of our affectionate regard. Who can manifest such an interest, more extensively or more permanently, than the cultivator? Whoever rears a single fine flower in front of his dwelling, gratifies hundreds of beholders by a spectacle, far surpassing, in grace and loveliness, all the wonders of the chisel or the pencil. Whoever plants a fruitful orchard, or magnificent grove, erects a monument of his taste and benevolence, which will call forth the grateful acknowledgments of those who may follow him, at the distance of a century. To what of our own handiwork, to what, that can fall from the lips or the pen of any of us, can we promise a continuance half so enduring? We cannot all of us be farmers, few indeed of us can be able agricultural writers, but we can all do something, directly or indirectly, and let each do what he can to ornament the face of our country—*Great parent of Fruits*, and we trust not barren of MEN, whose bright skies and bracing atmosphere have given health to our frames, vigor to our arms, and elasticity to our spirits; which has unfailingly supplied our wants

from her bountiful lap, and which, we trust, long after her peaceful bosom shall have been opened to take us to our final rest, will be the country of a free, a virtuous, and a happy people, through countless generations.

THE PROGRESS OF INDUSTRY, AND THE HARMONY OF LABOR.

[*Extract from an Address, by HON. A. H. BULLOCK, at the last Fair of the Worcester County Agricultural Society.*]

This, then, is the grand moral lesson of the hour—THE PROGRESS OF INDUSTRY, AND THE HARMONY OF LABOR. That PROGRESS is already proved and illustrated, when this society remembers, on the one hand, what its fathers saw, and what they did, and on the other, casts its eye on the exhibitions, and gathers up the instructions, of this day. That HARMONY, in interest and growth, in sentiment and purpose, is substantiated by this present reunion of all the sons of labor at this annual civic triumph. These exhibitions are teaching us that we are all producers and all consumers. These holidays are proving to us that the circle of all business and all pursuits, is a charmed circle, and that a single jar any where spreads discord and disaster through the whole. There is no such thing here as an isolated interest, nor any such man as an isolated laborer. In the formation and growth of communities, labor divides and subdivides itself—to the end, not that this pursuit or that may become easier or more honorable than the other, but that each and all may be the more profitable and the more productive. Would you say that the divisions and subdivisions of human invention in the machinery we have witnessed to day, with all their nice and varied improvements from year to year, involve any encroachment on the rights of labor? Neither with any more truth would you maintain, that any fixed department of human pursuit, whether of the hand or the head, in the field or the shop, in the counting-room or the office, could be stricken out without imparting disturbance to the whole. There is one harmonious idea running

through the whole scheme and the whole fabric of society, the whole theory and the whole practice of the world—and that is, increased profit and increased production,—greater capacity for producing, sustaining, educating, advancing the race. The small and despised stream which flows through the heart of this city, is a wiser witness and a more liberal philosopher than we. What growth, and upbuilding, and expansion of industry has it not witnessed ! It very early beckoned to its banks a scattered humble, dependent colony of mechanics. It kept them up through prosperous and adverse fortune, till now a score of smoking shafts penetrate the sky, and from the reservoir on the north to its southern outlet, its banks are vocal with the hammer and the axe, the whirling wire and the building machine, the forming plough and the noisy plane, the fierce glow of the furnace and the heavy working of iron, the whiz of the car-shop and the crack of the pistol—while a host of children, whom no man can number, look towards it in the morning and in the evening, for their daily bread. If I were to call upon this productive rivulet for its testimony, what think you, it would be ? Why, to be sure, that the wire-maker and the machine-builder combined to supply the cotton and woolen mill—that the plough-maker furnished his wares for the whole agricultural world—that the iron man, with his five or six scores of hands, was at work for every body—and so on to the end of the chapter, concluding with this essential and impressive fact, that, as this community has increased from year to year, new churches and new schools, a little more counsel and a little more medicine, yet other stores for wholesale and retail, more boarding-houses, and shoe-shops, and tailors and hatters, and grocers, and dress-makers, were demanded and came in upon us, till the town has become, what we behold it to-day—all helping one another, AND THE FARMER FEEDING THE WHOLE. I hold him to be a suspicious friend, who would scatter the seeds of dissension where Providence and natural causes have established a coincidence of interest ; and against his testimony I place that ever-speaking and benevolent stream, as it carries down to the waters of the Blackstone, to be diffused over yet larger communities between this

and the bay of the Narragansetts, that large universal truth of American life—**THE HARMONY OF LABOR.**

Cast your eye over this great county of fifty-seven townships, itself larger than Delaware or Rhode Island, teeming with an hundred and twenty thousand inhabitants. Thirty years ago, when this society began, the hills and valleys of to-day reflected back the smiles of the same great Benefactor. But, in all else, how changed ! How would the statistics of that day, if we had any, stand by the side of your industry and production ? Pardon me, for a moment, while I bring out, at a single glance, the amazing growth and development which speak like the notes of a trumpet to Worcester County. They present a picture for pride and hope to the farmer, exultation to the mechanic, and satisfaction to every body.

Our county presents, this day, a valuation—of course far, far below the real value—in neat cattle of almost a million and a half of dollars, larger, considerably, than both of the counties next highest on the list, the affluent Middlesex, and the verdant Berkshire, and more than a quarter of the whole in the Commonwealth. I am reminded of a remark made to me by the great farmer of Marshfield, a year since, in full view of the waters of Plymouth, and while gazing upon his hundred head of choice cattle, grazing upon his cultivated plains. "Sir," said Mr. Webster, "I can show you fish from my seas, and very excellent stock, but in the way of cattle, I have nothing to produce to a Worcester County man. In my opinion, your working oxen are not surpassed by any in the world, I saw none better in England, than you have in Sutton and Charlton." Our county gives us a valuation in horses—somewhat neglected, I fear, by this patronizing society—of rising half a million, and in swine, one hundred and forty thousand dollars ; of Indian corn, an annual production of almost \$300,000, nearly one quarter of the whole in the State ; of wheat almost \$20,000, one third of the whole. In rye, she is only equalled by alluvial Hampden, while her production of barley is almost \$50,000, one half of all that is raised in the State ; of oats, one quarter of the whole is hers, being the amount of \$105,000, surpassed only by Berkshire ; of potatoes, almost one quarter of \$1,000,000, be-

ing only behind Middlesex ; in other esculent vegetables, \$40,000. In hay, she stands far in advance of her sister counties, yielding annually more than \$1,100,000 ; in fruits, about \$120,000, and, in slaughtered beef, nearly \$50,000. So that, when we have set aside the stock, which is permanent, our county furnishes an annual production of rising \$2,500,000, from her hills and valleys, and this is probably only an approximation to the result which more accurate returns would furnish.

What has produced, what has stimulated, this labor of men, and these crops of the earth ? The same official tables shall instruct us with the answer. In the county of Worcester, say they, the annual production of the manufactured articles, specified in the returns, exceeds *fifteen millions of dollars*, and, as nearly as I can reason upon the data furnished, they support from *forty to fifty thousand* persons, having no direct connection with labor on the farm. Have you thought of it ? The county is up to about \$2,500,000 in her cotton products, second only to the county of *Lowell*. In woolens, she goes up nearly to \$4,000,000, about one half of all the products of the State ; all these, of course, far below the reality, for our statistics are incomplete, and seem likely ever to be so. Let me pass briefly ever some other items in our tables. Machinery, about \$500,000 ; cards, exceeding all the State beside ; cars and coaches, nearly \$350,000, one quarter of the whole ; chairs and cabinet ware, \$400,000, ahead of all ; boots and shoes, almost 3,000,000 ; straws and palm leaf, about \$350,000,—4000 females plying their busy fingers,—but I forbear. The grand total I have given, and it is a mountain of facts.

Is there no harmony here ? The two great divisions have gone onward together, each offering a market to the other, and both—agriculture and manufactures—uniting to develop and reward human labor. These are some of their harmonious results. They have started thousands in the great race of life, organized families to methodize the enterprising impulses of the heart of man, erected three church spires in every village, founded a thousand schools, opened accessible marts for trade and exchange, diffused graces, comforts, and charities at home, and transmitted, to all parts of our Union, influences that shall

neither fade nor decay. Here, then, we find, in this chief inland county of New England, amid her ice and granite, manufactures and agriculture, living in equality, advancing in fraternity. The one has developed, built up, enriched the other. Thirty years ago, when your society was founded, an embargo spread a panic through the interior. Now, the same interior, rich in her mechanic arts and manufactures, and strong in the smitten rock of her agriculture, I was about to say, could defy wars and embargoes, any thing but pestilence and famine. Not quite that either. While we plough the earth, there are others who, for us, must plough the ocean. We must, rather than go hungry, trade a little with the North and the West. We must, rather than dispense with luxuries that have become necessities, trade considerably across the waters. Hence, we are not more closely bound up together, here at home, in the same purposes and destiny of labor, than we are all dependent on the commerce of the eastern cities. We send them our products, and they pay us with those of their own making or procuring. The metropolis of Massachusetts comes, therefore, within the sphere of this day's consideration—Boston—in her growth and progress, her pride and renown, her trade and commerce—we are her's, and she is our's—sitting upon her peninsula and ours—with one hand receiving the products of the inland and the West, and, with the other, "espousing the everlasting sea." I repeat it, the great moral instruction of the hour, is the progress of industry and the harmony of labor. Worcester county has established the truth. The world proves the doctrine. England illustrates it on a stupendous scale. About as large as Illinois, she is mistress of the globe. Her harbors are a forest of masts, and her flag is on every ocean. She manufactures for the continent and the East, and has been called the workshop of the world. And, yet, with all her commerce, and all her manufactures, there is something more vital and valuable than they. The corn crop of Great Britain is estimated higher than them all. Commerce and manufactures have stimulated the soil and the labor of the empire, and her heaths, and bogs, and fens, have been converted into smiling fields for the hungry millions.

So shall it be recorded in Massachusetts—the England of

America. Her manufactures have only commenced. With studious economy, and continual improvement, their progress is upward and onward, for a growing market at home, in New England, over the Western prairies, yet half-peopled, and in the South, of freemen and slaves. Agriculture shall catch the impulse, and obey the necessity. We cannot enlarge our territory, but *extensive* cultivation shall become *intensive* cultivation, by which an acre, a third of a century hence, shall yield what five or ten acres produce now. And when the agricultural and mechanic societies shall meet, after the lapse of thirty years, where we are now, they shall count an aggregate production such as our times have not contemplated. They will then look forward, as we do now, to a future before them, of inventions and discoveries, yet to be apprehended, of more machinery and more food, to be produced for a population ever increasing, and ever making new demands for new and multiplied wants. And over the whole field of their vision, to them, past and future, they will recognize lines of harmony that bind all the sons of labor together, in one common interest and destiny.

Our government was formed for the purpose of unfolding, protecting, and expanding the interests of American labor, and weaving them into one system as broad as the Union. If the pursuits of men, however diversified, are, at the same time, identical—if American society is but an aggregation of laborers—then it ought to be the universally recognized duty of government to support and strengthen the right arm of its power. I say not, here, how that object would best be obtained—whether by legislation, or by withholding legislation, and leaving labor to take care of itself—that is a discussion which does not belong to the present occasion. But the principle—the doctrine, that government, emanating from the people, should have, for its first and highest aim, the promotion and preservation of the industry of the people, that, I take it, it is proper at all times to maintain in the midst of a community, linked together by a common and vital tie. And, accordingly, we find the record. Our glorious Constitution was erected upon that basis. In Massachusetts, Paul Revere, with his fellow-mechanics, at the ever-memorable tavern in Boston, gave a great impulse. When

John Hancock and Samuel Adams were wavering in alarm, these mechanics came up, and forced the Constitution to its adoption, in Massachusetts. In New York, at a meeting of the master carpenters, at the house of William Ketchum, in April, 1788, a similar sentiment prevailed in their ranks, and they sent up to the Convention, at Poughkeepsie, those great men of the times, Livingston, and Jay, and Hamilton, whose voices won over the Empire State to the cause of constitutional government. The yeomen of those days were engaged in the same undertaking. And I hold it as a type of the destiny of American liberty, and American labor, that those times found agricultural stability, commercial sagacity, and forensic eloquence, combining, with the nerved arm of the mechanic, to unfurl over American industry the broad banner of constitutional liberty, and constitutional law. If we are not too much wiser than the fathers, we shall, with a purpose as unanimous as our interests are, invoke their spirit, and appreciate their instructions. And as all industry is harmonious, from the Arrostook to Pascagoula, so ought government to conspire in the happy social union, to beautify and adorn our national heritage with the most brilliant results of practical science, with myriad specimens of mechanical invention and improvement, and with such ample measure of agricultural production, as shall make ours the workshop and the granary of the world.

INTELLECTUAL LABOR ESSENTIAL TO SUCCESS IN AGRICULTURE.

[Extracts from an Address, by HON. WILLIAM H. WOOD, at the last Fair of the Plymouth County Agricultural Society.]

However important bodily labor may be, however certain that no result can be obtained without it, that alone is not sufficient to ensure success. Else were the labor of the slave as productive as that of the free-man. There must be mental as well as bodily labor. Unless the hand be directed by the mind, it will have no cunning. Intelligent labor, labor directed by the intellect, is alone productive. To illustrate how much success in agriculture depends on intellectual labor, is my object.

Man and all nature around him, are made subject to fixed and inflexible laws, which, like those of the Medes and Persians, change not. All things exist, all changes in nature take place, in accordance with these laws. These being fixed and immutable, man, by his intellectual activities, may make himself acquainted with them, and thus learn to control them or place himself in accordance with them. Until he does so, he is the sport of nature, helpless and buffeted as a child disowned. Afterwards, in proportion as he becomes acquainted with them, he rises superior to nature, and makes many of her agencies bend their necks to his service, and become subservient to his will. The lightnings of heaven, formerly regarded with dread, by mankind, at first were robbed of their terrors, and conducted quietly to the earth, and now they are made our quick messengers, and run to and fro on our errands of thought.

The agriculturalist, before he can take the first step, must become acquainted with the laws which govern the production of animal and vegetable life, with the nature of the soil, and the agencies of nature around him. As his work is to bring forth the productive powers of the soil, how can he do so, unless he understand the laws by which nature acts in production? If he thwart nature, if he labor not in accordance with her laws, his labor will produce nothing. Not that he must or can understand all the processes of nature in production, but he must understand the conditions which are to be performed on his part before nature acts.

In ascertaining these laws, the agriculturalist must avail himself of the labor and experience of others. He must acquaint himself with the science of agriculture. The science of agriculture is the knowledge of its laws. There has at times existed in the community, a prejudice against scientific farming. But if science be the knowledge of the laws of nature, how can there be a well-grounded objection to it? The prejudice against scientific farming, has arisen from there not being science enough. Principles have been obtained from books, and without understanding their connection with other principles, or the nature of the soil, have failed in their application. In other cases, scientific farming has not been distinguished from theoretic. Theory

may lead astray, and is important only as one step towards the attainment of science. It is not to be trusted, until tested and reduced to positive knowledge. Thus we have had many theories, as to the origin of the potato disease, most or all of which have proved useless, by not standing the test of experiment. In order to obtain a knowledge of the laws of agriculture, we must make experiments, or, in other words, question nature. If questioned aright, she will always lend a listening ear, and give a decided response. Thus, would you inquire whether or not an exhausted sandy soil contains the necessary elements or pabulum for Indian corn; plant your corn, and; in the miniature and sickly crops, you have a negative response, not to be misunderstood. Theories are only useful, as giving a direction and system to our inquiries—useful, when so employed, dangerous otherwise. Theory ends where science begins; theory may mislead, science is sure.

Why should it be thought that a farmer is prepared for his occupation, without a knowledge of those laws of nature, with which he is particularly connected, without a knowledge of the materials upon which and with which he is to act? Consider the extent and variety of knowledge, which is called into exercise in this avocation. As the farmer, at the early spring, surveys his lands, and is laying his plans for the coming season, how many questions arise to his mind, upon the determination of which will depend the contingency, whether or not his lands, now barren and naked, shall wave with autumnal harvests. He must consider first the nature of the soil and wheat crop, it is fitted to sustain; and here the whole subject of the analysis of soils and agricultural chemistry, as to the elements of plants, and whence those elements come, whether from the earth or atmosphere, is presented to his mind. If certain elements are wanting for the sustenance of such a crop as he may determine to cultivate, what substances, or what manures will best supply the deficiency? How and at what time shall they be applied? How shall the soil be prepared to receive the seed; shall it be ploughed deeply or otherwise, and how long before it receives the seed? How shall the seed be selected and prepared; how and at what time shall it be committed to the earth; in what

manner, whether sown broadcast, in drills, or planted in hills, and how thickly shall the seed be sown or planted? These inquiries open a wide field as to the botany and natural history of plants, inquiries, with regard to which much is known, but more remains unknown. While growing, how shall the crop be cultivated and protected; to what enemies is it exposed, what vermin beneath the soil, what insects and birds above it? What they are that make war upon the labors of the husbandman, is more easily ascertained, than it is to find protection against their ravages.

But having ascertained *what* is to be done, the question arises *how* it is to be done. This brings to view the subject of natural agents. Man, in his physical constitution, is weak. The ox is superior to him in strength, the horse in fleetness, and even the beaver can fell a tree of the forest sooner than he. He can do nothing until he brings his mind to act upon the agencies of nature around him, and press them into his service. Nature has not provided him with the axe, the plough and the spade, but has provided the materials, and given him an intellect, so that he can construct them for himself. The agriculturalist takes advantage of these agencies, in the tools and implements of husbandry, and in his beasts of draught. He avails himself of the labor of other minds who have discovered and invented, and whose discoveries and inventions have now become the property of the race, and, so far as they are labor-saving machines, they improve his condition. His own mind is called into activity, in selecting those implements that are best fitted for the kind and mode of tillage, which he concludes to adopt, and he will not use those which he has inherited from his fathers, while improvements are going on around him. Were the manufacturer not to keep pace with the improvements in labor-saving machinery, which are constantly being made, he would soon find himself so far distanced in the race of competition, that he would find "his occupation gone." Why should not the farmer profit by the example thus set him? That improvements in agricultural implements are being made, we have had abundant evidence to-day. Compare the ploughs used here to-day, with those in use a quarter of a century ago, and mark the progress. The materials used in their construction are much the

same, but in different combinations and proportions—less timber, but more intellect.

The agriculturalist finds aid in another kind of agency, the muscular power of animals, subdued to the yoke, or the harness. This is the only kind of locomotive power hitherto used in tillage. The judgment of the farmer is called into exercise to determine which is best fitted for his use, the horse or the ox. In determining this, he must take into consideration the expense of keeping, the accidents and diseases to which they are liable, the variety of uses to which they may be applied. Having determined which, questions then arise, and they arise as to all his stock, what species are best, and what are the indications for distinguishing the best individuals of that species, and all that relates to the best method of rearing, training, and feeding stock. This is a science of itself, and one of the most interesting that engages the attention of the farmer. In my illustrations thus far, I have not alluded to the subject of rotation of crops, fruit trees, treatment of woodlands, draining of wet soils, irrigation of dry, farm buildings, all, or most of which subjects, engage the attention of every farmer; but the above illustrations show how much intellectual labor is combined with the proper tillage of the soil.

As the laws of nature act always the same, and never change, and as there are no limits to the human mind, in its powers and capabilities of ascertaining these laws, there is reason to believe that the science of agriculture might be brought to the state of perfection of an exact science,—that is, the farmer might, in spring, from an exact knowledge of his soil, of his seed, of the culture which he intends to give, compute with exactness the quantity and quality of the crop which should reward his labors,—were it not that there must be, as far as our knowledge at present extends, one unknown element in the computation. The state of the weather we have no means of knowing in advance—whether the season shall be warm or cold, wet or dry, defies all prognostication. Perhaps it will be always so. Perhaps a kind Providence, in order to make us feel our dependence on Him, intends always to have the winds and the rain, the blast and the mildew, in His own hand, high

above our knowledge or control. And yet, from the analogies of nature, we can but suppose, that even the winds and the storms are governed by fixed laws, and that those laws are written in a language which man may, one day, interpret.

The agriculturalist, then, cannot hope for success, but in the acquisition of knowledge relating particularly to his art, and in the cultivation of his intellect as well as his fields, in constant activity of mind as well as of body. It requires but little mental effort to go through with a routine of cultivation, such as his father may have practised; but, while he stands still, the world goes forward, and his farm goes backward. How many are the farms that are suffered to run down, not so much for want of labor, as for want of good management. How many fields do we pass that have been exhausted, and given up to barrenness. How little is known of the effects which can be produced by a skilful rotation of crops, or by the drainage of marshy lands, or by thorough cultivation, by confining labor and capital to a small extent of surface, rather than by extending them on a larger.

But it is not enough that the farmer strive to know that which was before known. It is not enough that he know the principles of the science of agriculture; he must be able to make a practical application of them. Maturity of judgment, as well as knowledge, is necessary. Each farm differs from every other farm. Each farmer must determine for himself, for what products, and for what kind of tillage his farm is particularly adapted, considering the nature of the soil, the location, the products in most demand, the distance from a market town, the capital which he has to employ in its cultivation.

But there is a higher field of action than this, and one requiring greater intellectual power. The agriculturalist should endeavor to extend the domains of science, to push his researches into territories hitherto undiscovered. Why should he not? Scarcely one corner of the veil has been raised, which conceals the secrets of nature from our view. Principles which now lie hidden—agencies hitherto unknown, are all around us, waiting to be discovered. Problems, too, are constantly arising in agriculture which require solution. Who so competent to do

this, as he who walks continually amidst nature's works, and who thus has opportunity to interpret her language?

I know the idea has prevailed, that the labor must be done by one class of men, and the thinking by another. *A priori* reasoning must have taught us that this is a false idea, and experience teaches us the same truth. If it had been the intention of the Creator, that physical and mental labor should have been disconnected, He would have given the body to one class of beings and the mental organization to another. So, too, experienced teachers that labor, where mind is wanting, is little productive, and that the mental powers are far less active when the body is not perfected and kept in a vigorous condition, by the energy which labor imparts. A sound mind can only exist in a sound body, and the exercise of each is the condition of its soundness.

The condition, then, of the farmer, is favorable for the advancement of the science of agriculture, if he would tax the body less, and the mind more. He can well do this, for, in proportion as his labor becomes directed by science, does it become more productive — in other words, less labor will produce the same results, and thus, he has more time for mental cultivation. For example, if, by superior skill, he can realize the same product from one day's labor that he formerly did from two, he has twice as much time as he had before, a portion of which he might dedicate to mental pursuits. So, too, the agriculturalist can depend on annual seasons of leisure with more certainty than those of most other avocations, — seasons, when nature, as if exhausted, retires within herself, to recover her wonted energies, and gain strength for future activity, and forbids the husbandman to ply his accustomed labors. With the time which he thus has at his disposal, with a mind intent on success, with a spirit of inquiry which he might carry into all his labors, watching nature in her operations, submitting theories to the test of experiment on a small scale, and at little risk, comparing results with one another (as we are met to do this day,) the practical farmer is placed under conditions most favorable for enlarging the field of agricultural science, and could hope to attain all that could be attained under any other circumstances.

Plant in the mind a desire to know, awaken a spirit of inquiry, and occasion will not be wanting. The observing mind turns all things to advantage. The greatest discoveries are frequently made by accident. Were the mind intent, the hints which nature throws out would be seized on and turned to a practical result much oftener than they are.

Physical toil loses much of its asperity, when united with mental activity. The malefactor on the treadwheel, the galley-slave at the oar, find labor hard and irksome, because their labor requires no exercise of the intellect. On the contrary, Humboldt, or Mungo Park, with their minds intent on scientific discovery, could travel the earth over, cross seas, ascend rivers, climb the highest peaks, or dive into the depths of the earth, and scarcely feel conscious of fatigue. When the farmer thus throws his intellect into his labors, it gives them new life and activity, and removes much of their drudgery. If, instead of adopting an annual routine of labor, pursuing the same course of tillage that his fathers have done, the agriculturalist would light up, in his mind, a zeal for the attainment of science, and a desire to advance the art of husbandry, directing his labors not merely to the raising of a given crop, but to the improvement of his own fields, the advancement of the principles and methods of culture, he would strip his occupation of half its toil, and feel that he was laboring for the attainment of a higher end.

THE STRUCTURE, THE PHYSICAL PROPERTIES, AND THE CHEMICAL COMPOSITION OF THE SOIL.

[An Address delivered before the Agricultural Societies of Berkshire and Hampshire Counties, at their Anniversary Fairs, in Pittsfield and Northampton, in October, 1848, by JOHN P. NORTON, Professor of Agricultural Chemistry, Yale College.]

MR. PRESIDENT AND GENTLEMEN: The meetings of a Society like this, differ from those other public occasions which call great masses of men together, in one leading feature.

We see celebrations commemorating some particular day or

signalizing some special event — we see gatherings of multitudes for political or moral purposes; but, in none of these, is the acquisition of *knowledge* so essentially the aim, if indeed it can, in most cases, be considered an aim at all. Here, however, this is with a large majority really the object. Some are more particularly interested in stock, others in implements, others again in grain and various forms of ripened produce. All come to seek and to give information.

Where, then, the gaining of knowledge is the definite object of assemblage, a few remarks, bearing directly upon practical subjects, will not, perhaps, be thought out of place. Were I to give advice upon matters of simple practice, I might well be considered presumptuous for even attempting to enlighten such eminent practical farmers as surround me.

But if I succeed in illustrating and explaining some connections of science with practice; in giving satisfactory reasons for modes of procedure generally adopted from the mere force of custom, my remarks will certainly not be devoid of interest.

The farmer of the present day, who desires to improve, and to thoroughly understand his profession, has a wide range open before him. All of the natural sciences offer advantageous fields for exploration. In the air, the earth, the water, in the vegetable and animal worlds, the mind once aroused, finds sufficient space for its utmost energies.

Each one of the subjects that I have indicated, affords ample scope for a host of observers during a long series of years; even with the great progress already made in research, each possesses within itself a multitude of unresolved problems, waiting for solution, and harmonious laws which we only need to understand, to be impressed with a still greater admiration than that we now feel when we are only able to see their incomprehensible workings.

These assertions, it is my purpose to illustrate to-day, by some observations upon one of the above topics.

I have selected the soil — not that it affords a broader field than some of the others, but because it seems naturally to come first when we speak of improvement, and because it is the foundation from which all progress must be made. I shall

confine myself to one part of this great subject — the structure, the physical properties, and the chemical composition of the soil. 'This may seem to some a narrow limit, but there will be no difficulty in proving it far too broad for the limits of a single address.

The soils which now exist upon the face of our earth, have been produced by a variety of agencies; the chief of these have been, the gradual decomposition and crumbling down of the rocks themselves, and deposition by water. We know that the external outline of the earth has undergone most extensive changes. In some places, it has sunk, in others risen. Sometimes it is evident, from the present conformation of the surface, that violent currents of water have swept across strata of rocks, wearing away the uppermost, and transporting their ruins to fill up depressions elsewhere. We often find strata upheaved and dislocated by action from below, and, in many cases, see the inferior rock presenting itself on the surface, having burst upwards in a state of fusion, in despite of every obstacle. Scarcely a region can be found which does not present striking evidence of the throes, convulsions, and changes, which took place before man became an inhabitant of this planet. It is for geologists to decide, if they can, how long a time was occupied in these changes; suffice it for our present purpose, that they have taken place, and that they seem to have been especially ordered for our benefit. Had the stratum last deposited, or formed, continued unbroken and unchanged around the whole earth, we should have had none of the beautiful variety of scenery which now greets our eyes on every side; no alternation of hill and dale, mountain, plain and valley, with the attendant variations of climate and production, which now so often remind us of perfection itself.

The soil would have been identical in composition over vast districts, if not over the whole earth, being all formed from, at least, allied species of rocks. Now as few rocks contain all the material for a good soil, this soil would doubtless have been imperfectly fitted to sustain most of the plants necessary for our existence and comfort. When exhausted too, we should have had no stores of mineral substances in forms convenient for supplying the deficiency.

The convulsions of nature, however, have been directed for our good, and they seem to have continued in a very long series before this earth was deemed fit for the abode of man.

Geological researches have shown us the existence of races of animals, that lived and died, and succeeded each other in countless myriads, through long and indefinite periods of time. We find them all changed to stone, entombed in rocky sepulchres. Sometimes the appearance of the rock denotes that it was deposited from a calm and quiet sea, where the animals died naturally, and in consequence seldom remain whole or unharmed. In other cases, life and its functions seem to have been suspended by some sudden change, so that we find large fish with smaller ones in their mouth, but half swallowed, and others with their thorny fins yet erect in the attitude of fear or rage with which they received their death shock, when that sudden mysterious destruction came upon them. In some of these periods also, upon that part of the land elevated above the water, there flourished a vegetation of exceeding luxuriance.

Internal fires have borne a decided part in all these changes, if they have not been the chief agents. It is well known that even now, as we go towards the centre of the earth, for each foot in depth the heat increases, indicating interior combustion still active. In the earlier history of our globe, these fires must have burst forth many times. The masses of melted matter may be plainly seen, penetrating the stratified rocks, filling cracks in their substance, flowing over their surfaces, or upheaving and contorting them.

But while some rocks were thrust upward, others sank into corresponding depressions; and vast currents of water, produced by these convulsions, seas and lakes turned out of their beds, seem to have swept over the world; completing the scene of confusion by tearing away and grinding down strata, bearing the materials to other regions, there to form beds of sand, clay, or gravel, according to the nature of the original rock. The vegetation, at such periods, seems to have been carried into hollows and buried deep by succeeding or continuing shocks, to form under enormous pressure and a high temperature, beds of coal for the advantage of beings yet to be created.

Thus all of these tremendous revulsions and changes of surface seem to have been made with the great end of preparing the earth for the habitation of man, making its resources more available to him.

In such a view, the globe appears to have been a vast manufactory for our benefit. Its beds of limestone, of marl, of gypsum, are dispersed in every direction, that they may be accessible to all; the various composition of its rocks produces soils capable of growing every necessary plant; its ores are abundant in proportion as they are the more indispensable for the formation of necessary implements; while, on the walls of our coal mines, we may still trace the forms of a gigantic vegetation which flourished long ages ago, and was then stored for our use.

It is not to be supposed that the present surface assumed its present shape, in every place at the same time. Some regions, without doubt, became tranquil long before others, but all must at first have presented a strange naked aspect. There was, of course, no soil, except in the track of some former current where matter in suspension had been deposited. This appearance of absolute ruggedness and sterility could not have continued long unaltered. Atmospheric influences, heat and cold, moisture and dryness, worked surely then as now, and, after a time, the most enduring rocks began to crumble. As the decomposing fragments became minute, little patches of soil were formed here and there. If it were on the side of a hill, fine particles had a tendency to descend into the hollows, being washed down by the rain. In ordinary circumstances, therefore, soil must have first appeared in the valleys, and in every little hollow of the hill sides. The durability of each particular species of rock had, of course, much influence upon the readiness with which the soil formed. Thus most of the slates, many limestones and sandstones, soften and decay readily when exposed to the air; on these were to be seen soils at a comparatively early period, and such soils soon became deep. But the granites, and some of the harder limestones, remain almost unchanged for a long period of years, and we see, even at this day, that the soils upon those formations are thin, while at fre-

quent intervals project masses of the naked rock, yet defying the influence of time.

Granite countries are ordinarily rugged, and, in consequence of this very slow disintegration of the rock, a great difference exists between the soil of the valleys and that of the hill sides. Every thing soluble, and all of the finer particles, are, of course, liable to be washed downward, and the more because they are produced so slowly ;—as a general rule, then, in such districts, the soil will be found light and thin on the slopes of the hills, and rather inclining to clay in the hollows, having there a large proportion of potash and soda. But when streams run through the valleys, it almost uniformly results that a soil of superior character is introduced. The reason of this is obvious, from a fact already stated, that the rocks vary in composition. There are few streams that do not pass through a number of different formations, and when, swollen and muddy from the accession of spring torrents, they overflow their banks, a mixture of fine particles, brought from every part of their course, is deposited. A soil, formed in this way, is obviously more likely to be fertile than that derived from any one rock, because it more probably contains every substance necessary to the sustenance of vegetation. Almost all of the deep and apparently inexhaustible soils which occasionally occur in our own and other countries, seem to have been originally formed by depositions from water, either as a stream or a lake. The distance to which finely divided particles are carried by a rapid stream is truly astonishing. The fine clay found in the bottom of some lakes in Holland, is known, from its composition, to have been brought down by the Rhine from its upper waters, in the mountains of Switzerland and Germany. The deposit, even from waters which flow through a very inferior soil, is of good quality, or at least much better than would be expected. I have recently had an opportunity of seeing this fact exemplified in New Haven, Ct. The Farmington canal, which terminated at that place, ran for nearly thirty miles from the city through a very light sand, so light that it was a long time after its completion before its banks could be made to hold water at all. This canal is now abandoned, and, in cleaning out one or two basins near the city, a de-

posit of nearly a foot in depth was found, having quite a clayey character, baking hard, and cracking when dry. This deposit has proved worth nearly or quite as much as manure on the light sandy soils of that neighborhood.

Soils, formed in this way by water, are common in every country, and there are also large tracts covered by some of those terrible ancient floods of which I have spoken. This may all have been done at the period of the deluge, but, however that may be, the original formation is covered sometimes to a vast depth by the debris of others. In all of these cases of superficial deposit, the character of the underlying rock has, of course, little or nothing to do with that of the soil: but in most situations it has a controlling influence, and a study of the one will give us a general idea of the other, beside leading to important practical results.

The variations in the composition of different rocks are far greater than is ordinarily supposed. It might be thought by many for instance, that the soils of limestone countries would as a general rule be nearly identical in composition, but this is by no means true. The purer limestones contain as high as ninety-five per cent. of carbonate of lime, but there are many which contain impurities to the amount of much more than half their weight. Then, too, there is a large class of limestones in which magnesia is found in greater or less proportion. The soils produced by these last, when the magnesia is in large quantity, are frequently very poor and cold; differing extremely from those formed by a limestone in which little or no magnesia is present. An unpractised eye would be unable to distinguish between the two kinds of stone, and a farmer, who had lived upon a good limestone soil, might be miserably deceived when he thought he had settled upon another of the same character. In the south of England, on the chalk formation, there are, among many others, two layers of chalk, the one immediately above the other, extending over a large district. The upper layer differs little in appearance from the lower, except that it contains a larger number of flints; but the soil produced by its decomposition is thin and poor, while that from the lower is very fertile. So marked is the difference, that this layer is carted as a ma-

nure for the upper, and pits are dug to a considerable depth where there is any prospect of obtaining it.

I had occasion, during my residence in Scotland, to examine a number of slates from a certain district in Wigtonshire, with reference to their per-centage of lime. The difference was found even greater than had been anticipated, some of them containing six or seven per cent., and others little more than a mere trace. These layers were a part of one continuous series, and each formed soils in a comparatively small district. These soils of course varied as did the slates, in their proportion of lime. The layers of slate were thin, and hence it might happen that there were two or three kinds of soil on the same farm. The farmer would find then, that the application of lime on one field was beneficial, on another quite useless. He would puzzle himself to make out the cause, when the simple reason would be that one soil had enough lime already, but the other had none at all. In this way may the greater part of the contradictory views regarding lime be reconciled.

Quite as great differences as the above are to be found in soils derived from sandstones. There are various formations of sandstone as of limestone, and they also differ greatly in their composition ; producing, in some cases, miserable shifting sands, and in others some of the richest soils known.

The same variation is frequently found among the granite rocks, as I will exemplify by the following table.

This table is intended to show the general composition of certain common minerals and rocks. The names may not be understood by many, but that is of no consequence to my present purpose. It is enough to know that they are names of common substances and rocks, some of which are met with in almost every neighborhood :—

COMPOSITION OF MINERALS AND ROCKS.

Per centage of	Felspar.	Mica.	Hornblend.	Hypers- thene.	Serpen- tine.	Basalt.	Green- stone.
Silica,	65.21	46.10	42.24	51.35	40.08	46.50	57.25
Alumina, . . .	18.13	31.60	13.92	—	—	16.75	25.50
Potash,	16.66	8.39	—	—	—	—	—
Soda,	—	—	—	—	—	2.60	8.10
Lime,	—	—	12.24	1.84	—	9.50	2.75
Magnesia, . . .	—	—	13.74	11.09	41.40	2.25	—
Pro. of iron, . .	—	8.65	14.59	33.92	2.70	—	—
Perox. of do., .	—	—	—	—	—	20.12	3.50
Water,	—	—	—	—	15.67	2.00	3.00

A mixture of the two first minerals in this table, felspar and mica, with common quartz or silica, forms granite. In some granites, however, the place of mica is almost or entirely supplied by the third mineral, hornblend. Now it will be observed that in the two first columns no lime is mentioned, but in the third there is rather more than twelve per cent.; here will result a notable difference in the soils formed from granites containing hornblend, and those which contain only felspar and mica.

In the fourth column is named hypersthene, a rock resembling in appearance some of the hornblend rocks; but containing little lime, no potash or soda, much magnesia, and a third of its weight of protoxide of iron, a substance most injurious to vegetation when in large quantity.

Serpentine, a rock which forms many soils, has nearly half its weight of magnesia. Between basalt and greenstone, allied species of rocks, are also seen very marked differences.

These instances show that much light as to composition of any soil, may be gained by a knowledge of the particular rock from which it was wholly or chiefly formed. Reasoning as above, we may ordinarily derive some general rule which shall hold good over a particular district.

If not absolutely certain in all cases, we may at least in this way work out a judicious series of experiments, for the purpose of ascertaining, with as little expense as possible, what is the most advantageous and economical application to any given soil.

Beyond this, the great mass of farmers cannot go, for the

reason that any farther approach to accuracy can only be made with the assistance of chemical analysis. I am aware that views have been industriously circulated which are contrary to the position now taken, but I feel quite satisfied that the promoters of such views are not exactly aware of the impracticability which is inseparable from their plans.

That there are difficulties in the way, will be obvious from a glance at the following table:—

COMPOSITION OF SOILS.

In one thousand parts.	Fertile without manure.	Fertile with manure.	Very barren.
Organic matter,	97	50	40
Silica,	648	833	758
Alumina,	57	51	101
Lime,	59	18	4
Magnesia,	8	8	1
Oxide of iron,	61	30	91
Oxide of manganese,	1	3	trace.
Potash,	2	trace.	—
Soda,	4	—	—
Chlorine,	2	—	—
Sulphuric acid,	2	1	—
Phosphoric acid,	4	2	—
Carbonic acid,	40	4	—
Loss,	15	0	5
	1000	1000	1000

Here are a great number of substances mentioned, and all of them present in the first soil, which is one of great fertility. That all of them are important, we see in the second soil, where the absence of a few makes the addition of manure indispensable. It is not necessary that the proportions should be exactly as above, but all of these substances must be present to ensure great fertility; where many of them are wanting, as in the third column, we find barrenness.

Any person of ordinary understanding, may soon learn to determine with tolerable exactness the more abundant substances, such as silica, alumina, lime, iron, &c., and this is as far as many *analysts* have seen fit to go. There are, however, others which are present, but in comparatively small quantities, even when we examine the very best soils, as shown in the table.

Among these are potash, soda, phosphoric acid, sulphuric acid, &c. Phosphoric acid for instance, is necessary, because it forms a large part of the ash in all of the grain crops, being chiefly concentrated in the seed. This acid, in combination with lime, is the principal material from which the bones are formed. It is thus essential in a soil, for the ultimate end of building up the animal framework through the plant. Now a quantity of this substance, which would not be detected in the soil, except by a skilfully conducted analysis, might still be amply sufficient for any crop. Many of the bodies contained in soils are difficult to separate entirely from all impurities, and a person not thoroughly conversant with chemical analysis is always liable to the most gross errors. Those who devote themselves to the science of chemistry, aided by accurate instruments, and pure substances for testing, frequently find it necessary to retrace and revise their steps. Unforeseen exigencies constantly arise, not mentioned in any printed formulas for analysis, which require extended experience in order to avoid serious mistakes. Owing to such difficulties, all efforts by uninstructed analysts are to be looked upon with distrust, when they clash with what is ordinarily supposed to be the truth.

From my own experience, both as a student and teacher, I should say that two years of study and practice is a time quite limited enough for the fitting of a student to make thorough and accurate analyses. Many men would not learn to do so in four years, or even longer; the business of a chemist requiring a peculiar talent and habit of mind, quite as much as that of a lawyer or physician. The gentlemen, then, who propose, as some have done, to turn out our young farmers finished analysts at the end of six weeks study, are surely more sanguine than well informed.

Farmers may learn to make some simple and useful testings, may determine some of the leading ingredients of the soil, or make mechanical analyses by finding the proportions of sand and clay; beyond this, few will have inclination or ability to go. Nor do I think it, in most cases, necessary to go farther. A general knowledge of the constituents of a soil in any district, is, in ordinary experience, quite sufficient. Should difficulties occur

inexplicable by common rules, a thorough analysis ought to be made by some really competent person.

I have called attention to certain substances, as necessary to a fertile soil, but have not particularly designated among them, a name which is at the top of the first column of the table, "organic matter." This name does not refer to a single substance, but to a class; all of the other names in the column are included in another class, "inorganic matter." These names were given as most fitly describing the grand distinction between two great classes of bodies.

Organic matter—is either living defined organs, or something that may be considered a product of such organs. When exposed to heat, the organic part burns and disappears, thus showing that the solid substance burned had originally been nothing but air. To form these organic bodies from the different kinds of air or gas, requires the action of living organs. Inorganic substances are also present in the plant, and in the animal, but they were not formed in the plant, merely drawn in by it from the soil. When the plant or the soil is heated, the organic part is that which burns, being reconverted to its elementary form; the inorganic part, being incombustible and not volatile, remains in the form of ash.

The organic matter of the soil is derived from the death and decay of plants and animals. When in the form of vegetable mould, its presence seems to exercise a remarkably beneficial influence on all of our cultivated crops. It would occupy too much of your time, were I to enter upon the contested theories as to the manner in which this organic matter acts so decidedly. Leaving these aside, it is sufficient to say, that it is a necessary portion of every fertile soil. In all ordinary cases, the organic constituents of a soil decompose slowly; a part goes to the sustenance of plants, and part, being evaporated, disappears entirely. These changes proceed most regularly, in the presence of a sufficient degree of moisture, air, and warmth. If the quantity of water in the soil, however, be large, and remains there permanently, its effect becomes quite injurious, rather than beneficial. In the first place, air and warmth are, in a great degree, excluded; then the process of decomposition

is arrested, and various acid vegetable substances begin to accumulate. If water still stands, and stagnates, the soil becomes so unfavorable to the cultivated crops, that they do not succeed, and the artificial, valuable grasses are gradually replaced by swamp grasses, or rushes. The water now becomes dark colored, owing to its holding in solution a small quantity of these vegetable acids. In tropical climates, the heat is so great, that vegetable matter decomposes, even when immersed in water, and consequently there is no entire arrest of decomposition: in temperate regions, there is a gradual accumulation, and, after we pass a certain degree of latitude, this accumulation is very rapid. From such causes, result the peat bogs, and morasses of all northern climates. When once commenced, these have a peculiar growth of their own, and increase from year to year, until, at last, they sometimes reach the thickness of twenty or thirty feet. Now, it is to be observed, that the *elements* in these quaking, hopelessly barren swamps, are the *same* as those which exist in the most *fertile soils*; the difficulty is, that they are here, as it were, locked up, so as to be worse than useless, to any valuable plant.

The remedy for this state of things is simple; a few drains of tiles, or small stones, placed at proper distances, and cut to a proper depth, will be found an infallible specific. The superfluous water is carried away, and, as it retires from the surface, air and warmth follow; then the work of decomposition commences, and, after a time, a soil of uncommon fertility is obtained.

But the evil effect of much water upon the soil is seen, not in bogs and swamps alone, but also, in a great number of our cultivated fields. In such places, water is not present to the extent before described; the soil may be even, perfectly firm and dry at midsummer, but still, there is so much water during autumn and spring, that neither grass nor cultivated crops succeed well. The action here is, so far as it goes, similar to that already mentioned. A quantity of vegetable acids are formed, owing to the imperfect access of air, sufficient to check, if not to entirely arrest, the growth of crops. The farmers ordinarily call such land cold and sour, and, by so doing, they express ex-

actly its properties. A practised eye will soon detect these wet fields, or the wet spots, caused by concealed springs, on land otherwise dry. A few rushes, or some coarse, wiry grass, will always betray the secret. Here too, the only remedy lies in the drain. Its ameliorating influence is more quickly felt on this cold, sour land, than in swamps, because the evil has not proceeded so far. I am scarcely acquainted with a farm, in my own part of the country, which has not some land upon it that needs draining. In nearly every section of New England, I believe that a farm without some wet places on it, would be an exception to a general rule.

The mischief caused by too much water is not confined to the organic part alone, but extends to the various inorganic substances that I have mentioned; they, too, undergo various changes in the soil, which fit them the more readily to serve as food for plants, insoluble combinations gradually becoming soluble. These changes are arrested almost entirely in presence of standing water, and, in some cases, positively injurious compounds are formed.

Draining thus becomes, on many soils, the necessary foundation of all permanent advantage, and must be considered as one of the most important operations connected with improved cultivation.

It is unnecessary to cite any facts, proving the inequality of organic matter in different situations; every person, at all conversant with practical farming, knows, that scarcely any two soils are alike in this respect. There is no exact standard fixed as to what ought to be the proper quantity. We find fertile soils, containing from one to twenty per cent., and therefore, conclude that the establishment of such a rule is not necessary.

This organic matter, being caused in the soil by the decay of plants and animals, must have been originally derived from the atmosphere. The earth at first, was certainly destitute of any such matter, and the first plants were dependent for it on the air alone. This may seem an argument, telling rather upon the side of those who uphold the doctrine of inorganic manures; but it is to be remembered, that there are certain classes of plants which will thrive in such situations. On the bare, drift-

ing sands of Holland, the *arundo arenaria*, (a species of reed,) the spurry, and various other plants are cultivated, which flourish in these places. When a few crops of these have died and decayed, there has enough organic matter accumulated to support more valuable plants. So it is frequently in this country; if we can, by adding manures, bring our sandy soils up till they will bear clover, they can afterward easily be kept in good condition. The argument then, tells in favor of the organic theory rather than against it, inasmuch as it shows the necessity, to our valuable plants, of organic matter in the soil.

There is scarcely any land which does not improve, to a certain extent, by lying idle; this takes place, even where the worst possible system is pursued, as in some parts of Holland, where they grow rye every season, until they cannot get their seed back, and then let it lie for a few years. In the Highlands of Scotland, the same course is adopted with oats. I remember a story of a gentleman who remarked to a tenant, that he had a very poor crop of oats on a certain field; "'deed, sir, and it ought, said he, it's the *fifteenth*." But even, on such soils, rest does not fail to produce a certain degree of renovation, so that, after the lapse of a few years, crops can be again obtained. This arises, partly, from the accumulation of organic matter, and partly, from the decomposition of fresh quantities of inorganic substances, which are thereby made ready for the sustenance of plants. These two sources of benefit have caused the extensive employment of naked fallows; by leaving the land, for a season, without a crop, and frequently stirring it, the inorganic substances accumulated; indeed, this was the chief benefit of the system, as the organic matter, owing to frequent turning over, and exposure to the air, was decomposed, and disappeared to an extraordinary degree.

Now, by the introduction of green crops for ploughing under we are enabled to produce a much greater supply of inorganic substances for the next crop, and, at the same time, to increase, instead of decreasing the organic part. The roots of clover, and other green crops, bring up, from the lower part of the soil, inorganic substances, which are, with the plant deposited on the surface, in readiness for the support of the succeeding crop.

Naked fallows, then, are no longer necessary, except, perhaps, occasionally for the extirpation of some troublesome weed.

This improvement of the soil is seen quite strikingly in forests. We there find, that very poor land, incapable, without heavy manuring, of bearing crops, sustains a full growth of large trees, and, at the same time, improves from year to year.

This appears very strange, but, when we consider the reasons for such a seeming anomaly, we find that it is only a beautiful exemplification of the law which we are considering.

The growth of our ordinary crops is sudden, and must be completed within a single season ; that of trees is slow and continued through many years,—the demand upon the resources of the soil is more gradual. Then, too, the roots of trees bring their food from a very extended range ; spreading wide and descending deep, they draw supplies from sources inaccessible to annual plants. By a wise regulation of Providence, the wood, which constitutes the great bulk of the tree, contains very little inorganic matter, frequently not more than one-half or three-fourths per cent. ; while the leaves often contain, when dry, from fifteen to twenty per cent., and even more. Thus, the trunk derives nearly all its bulk from the air, while the leaves, with their large proportion of organic matter, fall upon the soil, and constitute an annual top-dressing, of a nature best calculated to improve its capabilities. Even when the trunks of the trees are carried away, a small portion of inorganic matter is abstracted, compared with that which has been deposited on the soil during their growth, in the shape of leaves and bark.

The same thing is observed to a considerable extent, upon grass lands, where the soil is of good quality. In situations where grass has annually grown, and decayed undisturbed, for a long series of years, a surprising degree of fertility is attained. Many of our western prairies and cleared forest lands, are examples of this principle. We have instances where crops of Indian corn and wheat have been grown, for many years in succession, with scarcely a perceptible diminution in the yield. Ordinary manure upon these soils is injurious, because it induces too luxuriant a growth ; they really seem inexhaustible. Where, however, there is no source of supply to make good the

annual loss, this constant cropping will begin to tell after a time, and the crops will gradually diminish. This diminution will at first be slow, but no less sure; and, if such a ruinous course be continued, we shall see tracts of our finest western soil become like that of Virginia, deserted and barren now, but once fertile as any soil could be.

It is a matter of national importance, that this should not happen, that these broad and beautiful regions should remain what they now are, the garden of the earth; that the slow process of recovering worn out and exhausted land, should not be needed here. When land is in fine condition, as that of the first column in the table, with all of the necessary substances present, the task of keeping it up is comparatively easy. A bushel of wheat, weighing sixty pounds, does not contain, on an average, more than one pound of ash, or inorganic matter; so that, even if the crop is fifty bushels, there will be little more than fifty pounds of ash to the acre carried away in the grain. If the straw is also not returned to the land, the loss is far greater, for two tons of straw would contain not far from two hundred and fifty pounds of ash. Here, there would be a loss of about three hundred pounds annually. I am aware, that, in some western districts, the application of this straw as manure would be injurious, because there is already more than enough organic matter. It might, however, be burned, and the ashes applied, even in such cases. There would be no danger of over-luxuriance from this last application, and the disappearance of a class of substances difficult to replace, would be greatly retarded. It is, on most soils, much easier to supply organic matter than inorganic. By proper management, the former may be obtained chiefly at the expense of the atmosphere, but the latter must come from foreign sources.

The time will arrive, even on the richest of our western land, when the organic matter will begin to fail also; this period should be carefully watched for, and organic manures added as soon as it is found that the land will bear them.

It will have been noticed, perhaps, that I have, during all of my remarks, spoken of inorganic and organic manures as alike necessary; this may have seemed strange to those who have

seen many of the views now entertained by others on these points. No agricultural questions have been more vexed. At first, we were required, by a high authority, to fasten our faith upon *ammonia*, alone; if we succeeded in adding that to the soil, the work was nearly all done. Within the last two or three years, however, a wonderful change has occurred; the same high authority assures us, that all of our trouble in trying to catch ammonia, our precautions to prevent its escape, have been, perhaps, not exactly useless, but rather unnecessary, for inorganic manures are what we want; ammonia is a very good thing, but there is an abundance of it in the soil already, even when that soil is quite barren. The consequence of these successive changes has been, that we have had wars without end. The ammonia theory was very beautiful, and was received with great eagerness; but, by the time that the mineral manure theory appeared, many had tired of nothing but ammonia, others were disappointed in their expectations of success through its use, and all of these turned naturally to the new light. In England, specific mineral manures were patented, which were to work wonders, under all circumstances. There was a manure for wheat, one for oats, one for turnips, and so on, all infallible. It is just to say, that there is no doubt but many of these extravagances were put forth by interested parties in England, without the knowledge of the inventor. Those who have perused the English agricultural papers during the last few years, cannot have failed to perceive how general has been the disappointment in the use of these manures, and how much harm has resulted to the cause of rational improvement.

It may be best to explain here, that, in speaking of inorganic manures, I mean those strictly mineral, as gypsum, lime, salt, carbonate of potash, ashes, &c. There are also many manures of a mixed character, containing both organic and inorganic substances, such are guano, common farm-yard manure, &c.

As ammonia, or no ammonia, has been a species of war cry, I will take ammonia, or rather manures, containing nitrogen, as the basis of a few remarks, designed to show that the truth of this disputed question lies in *neither* of the extreme views above mentioned. I have noticed, beside ammonia, manures contain-

ing nitrogen, for this reason : the beneficial action of ammonia, consisting in the supplying of nitrogen to the plants, I maintain that some manures containing nitrogen, in another form, such, for instance, as the nitrates, are equally beneficial. That is, I believe that plants may obtain their nitrogen in other forms than that of ammonia.

With this question, however, we have at present nothing to do. As to the beneficial action of ammonia, I shall only take up a part of the argument. The scientific grounds of dispute would, for the most part, be unintelligible to this audience, and would, moreover, be wearisome from their length. It seems to me, that, with practical men, the results of experience will be more impressive, and reasoning, based upon long practice, more convincing.

The beneficial action of manures containing nitrogen has been considered as unquestionably established. Ammonia being the most common form in which nitrogen is applied, the name has become quite familiar, and manures containing a large quantity of it have borne a high value. It has been an object, as I have said before, to secure it, and increase its amount in every possible way. Now, however, we are told that this has all been a mistake. It is said that sufficient ammonia is brought down by rain and snow from the atmosphere, to supply the wants of any crop, and that, moreover, there is already a large quantity present in the soil. We are informed that there is, even in the subsoil, several thousand pounds of ammonia to the acre, and it is asked, if the small quantity that the farmer applies, can be expected to produce any additional result. Judging from the reputation of the gentlemen who made these determinations, they should be correct, and yet I think, that their samples of soil must have been rather remarkable ones. If there are thousands of pounds of ammonia in an ordinary soil, why is it that the addition of two or three hundred pounds of some manure, containing a certain proportion only of that substance, produces such a marked and striking effect ? I have seen many comparative trials of different manures, on grain crops, for instance, and where each manure occupied a ridge through the field, those upon which the ammoniacal manures were em-

ployed could always be selected from among others, by the superior luxuriance, and the peculiar dark green of the leaves and stalks. That this was owing to nitrogen, was proved by the appearance of the same distinctive characters where nitrates had been applied. Every farmer who allows the dark-colored drainings from his barnyards to run over his grass, has seen the same dark green color and great luxuriance. Very careful experiments have lately been concluded in England, having, for their object, the decision of this question. The result arrived at seems, in the main, to be, that ammoniacal manures have, in most cases, a marked effect; they do not always increase the yield of grain, but always the growth of straw. Why is it, that the small quantity of ammonia, added in the shape of guano, or very rich barnyard manure, produces such an effect, when there are already thousands of pounds in the soil? Clearly, this large quantity must either be in some form inaccessible to plants, (and it would be difficult to conceive of any such form,) or it is not in most cases present.

When the proportion of lime, or any other inorganic manure, is sufficient in a soil, the addition of more is of no service; this we know by repeated experience; might not the same thing be expected of ammonia? In this way, the objection that ammonia is frequently of no use, should be answered. It is quite true, that, where it would fail to produce a crop, bones, perhaps, might succeed perfectly; but this only proves, that phosphate of lime, or bone earth, was the particular substance which that soil wanted. If a soil were entirely deficient in lime, the addition of every other manure under the sun, so long as they did not contain lime, would not secure a good crop of any plant, requiring that mineral ingredient. On the other hand, if there were already lime enough, tons of it in addition would not compensate for the absence of potash.

So, also, there are soils where an abundance of ammonia is already present; on these, further additions do no good, and even in many cases do harm, by causing an exceedingly rank and luxuriant growth of stalks, so that the grain does not come to maturity, or is injured by lodging; the inorganic matter, not having kept pace with the organic, the stem is weak. Such is

the case, on some of our rich prairie lands. Unhappily, there are but few farmers who have the good fortune to possess land of this description, and therefore, in the vast majority of instances, ammonia will be found beneficial, and the farmer will have good crops, who uses it judiciously in connection with other manures.

The soils of the best districts in England are in higher condition than any of ours, except in peculiar cases, for their average crops of wheat, oats, turnips, &c., are much larger than ours. These soils, then, might be supposed well stocked with ammonia, and ought to contain a number of tons per acre. It is, however, a singular fact, that the price of guano, in the English markets, has for several years been ruled by the quantity of ammonia that it contained. During my stay in Edinburgh, samples from more than five hundred cargoes were analyzed in the laboratory of Professor Johnstone, and were sold by his analyses, fluctuating in price as they indicated more or less ammonia. Had there been any mistake in this method of estimating value, experience would soon have detected it.

The farmer then, I should say, ought to collect and apply nitrogen in every accessible form; not because it is more necessary than other constituents of the soil, but because it does not so often abound there, and because plants obtain it from the atmosphere with less facility than they do the other elements of their organic part. Ammonia being the most common compound, containing nitrogen, his attention will naturally turn chiefly in that direction.

I have touched upon this subject at the present time, from a conviction of its importance to the cause of agricultural improvement. When farmers are told, on the one side, that a certain substance is valuable to them, and, on the other, that it is useless to trouble themselves about it, they are of course perplexed, and can only fall back upon results; even these are liable to misinterpretation, but, when they are so nearly uniform, as in the case of ammonia, the practical man is justified in disregarding mere assertions to the contrary.

I am not so vain as to suppose, that my views upon this question will convince those who hold contrary opinions, but if they

lead them to reconsider the question calmly, with minds as far as possible divested of mere theoretical considerations, I shall be satisfied.

I have already, perhaps, wearied my audience, and yet my task is very imperfectly accomplished, for I have noticed but a small part of the interesting topics connected with my subject. The varieties of chemical composition in the soil would alone occupy another hour. Enough has been said to show, that the field is of immense extent, and also that the applications of science are directly practical. I am sure, that not a point has been touched, with regard to which the intelligent, practical man will not say, that more light is needed.

And still, these were only parts of the great agricultural tract which I attempted to occupy. The quickly passing moments warn me that I must resign the rest to other hands, and to unsatisfied hearers.

And now, it is quite probable, that there are those among my hearers, who do not understand many of the subjects upon which I have spoken. Still, I cannot see how they can well be presented in a plainer form; there is but one remedy—the farmers must inform themselves as to these things, or, if they do not feel like entering far into new paths, let them give their sons the opportunity. But many will say, this is book-farming, and what if it is? is a man any worse because his knowledge is increased?

Cannot every farmer see, that he would work to better advantage, if he knew exactly, what his soil and his plants needed, in the manner indicated by the foregoing tables? Would this knowledge spoil a practical farmer? surely not—it would enable him to go on improving from year to year, uniting more and more, scientific discoveries with practical skill.

It is this union of science with practice, that I desire to advocate. In place of each decrying the other, there should be a combination of effort toward a great common end.

To this, we are surely coming; for public attention is turned in the proper direction, and thousands of experiments in the fields of enterprising men have proved, that science may greatly benefit practical agriculture. The advances that have been

made are but the beginning of a progress which will be almost unlimited.

The intelligent farmer then, is, I think, imperatively called to the examination of this subject, and I shall be content when this is a general impression, for those who once commence such an examination in a proper spirit, will not require farther inducements to continue it. In its pursuit, they will find pleasure as well as profit; profit, in an increasing ability to obtain the largest return with the smallest expense, and pleasure, as light is thrown upon the simple and yet beautiful systems, which the Great Author of all things has established, and which he is permitting us gradually to unfold.

REMARKS BY J. E. TESCHEMACHER.

[The following report of remarks made by J. E. TESCHEMACHER, Esq., at several meetings of the Legislative Agricultural Society, during the month of January, last, has been furnished by that gentleman, on request made to him. The importance of the subject, and the experience of Mr. Teschemacher, with reference both to practice and theory, give a value to these remarks, which warrants their insertion in this place.]

FIRST EVENING.

The important, vast, and almost inexhaustible subject of manures had always divided itself in his mind, into three great considerations:—

1st, on the nature of the crops required to be raised.

2nd, on the nature of the soil from which these crops were to be obtained, and,

3d, and the most important, on the nature and application of the manure itself.

It was necessary to condense, into the briefest form, what he had to say on all these considerations.

Every one knows, that, if clover was wanted, a large quantity of lime, and also sulphur, was requisite, if tobacco, potash and soda. In England, after many years' cultivation of wheat, all the barnyard manure that could be heaped on the ground,

would not raise any more, until bone dust was added, and, with this, many acres hitherto considered barren, had given excellent crops. The size and quality of turnips have been found to be much benefited, by the use of the soluble phosphate of lime, (vitriolized bones).

One question then, is, what does the crop we require, abstract from the soil, during its growth and progress to maturity? This question is answered by the various analyses of crops, which are to be found in every agricultural treatise. But another, and a much more important question, now arises. What part of the ingredients of these crops, puts most bone and muscle in the animals which feed on them? Also, can we, by particular manures, increase, in these crops, the quantity of these ingredients? Part of the first question has been answered by Liebig's last treatise. We knew, before Liebig was born, that the bones of animals were chiefly formed of phosphate of lime, but we did not know, before the publication of this last treatise, that the phosphates of other alkalies formed essential parts of the flesh and blood of animals; this, he has there completely and satisfactorily proved. In the lime districts in Switzerland, the cattle are much larger than in those where lime is scarce in the soil. The great test of the quality of a crop then, is, its nutritious action on the animal, this is of more importance than its appearance, or even weight. Now it is evident, that, by offering as food to these crops, a manure abundantly supplied with these ingredients, combined with others ensuring a luxuriant growth, we enable them to obtain a maximum thereof. It would take too much time to enter into the detail of numerous experiments made by him, on this subject, the result of them is a difference of thirty per cent. in these ingredients dependent on the difference of the manure. Thus, if the *ashes* of wheat contain thirty-five per cent. of phosphates, the difference of manure will increase this to forty-five per cent. Hence, the consideration on the nature of the crops is of much interest.

Consideration on the nature of the soil. All soils are composed chiefly of sand (silica,) clay (alumina and silica,) lime, magnesia, some organic matters, sources of carbonic acid, and a few oxides of metals; these ingredients in various proportions.

The stones accompanying the soil have the same composition, and suffer, annually, some small disintegration : from such disintegration soils are formed.

Sand, (silica,) besides lightening too stiff a soil, is chiefly of use to strengthen and stiffen the stems of plants, enabling them to resist the wind : for this purpose, it must be dissolved by contact with an alkali, (potash or soda). These are usually found in clay, (alumina,) which, as an ingredient of the soil, or of the compost heap, is invaluable, although it never enters into the organization of the plant. When the chemist analyzes a mineral containing alumina, it is almost impossible for him to wash it free from the alkaline substances, which he has used in his analysis, or which were originally combined with it. It grasps and retains them with the most invincible obstinacy. Clay, in its natural, original state, is formed from the disintegration of felspar, and is, therefore, always combined with notable portions of potash and soda.

The president had spoken highly, but by no means too much so, of charcoal, as an absorbent of the useful part of manure ammonia. He, himself, had experimented many years with this substance, in various ways, and could amply confirm all the president had said. Clay appeared to him, however, more retentive than charcoal, certainly, more so as regards potash and soda, and may be had where charcoal is hardly to be procured. Clay, then, well pulverized by frost, is a most valuable addition to the compost heap, and a soil containing a fair proportion of clay may, by manuring, be rendered the most permanently rich of any. A light soil, besides permitting the ammonia to be drawn up into the atmosphere by the heat of the sun, also, allows the valuable salts of the manure to be easily leached through by heavy rains, and a soil with too much clay does not permit them to mix freely, so that the roots of the crop can obtain easy access to their nourishment. The farmer who studies the nature of his soil, will, while manuring liberally, be able to manure much more economically than one who knows nothing on the subject. It is probable that much of the labor and expense wasted in manuring some lands with lime and plaster, as well as many of the differences of opinion on these manures, have been owing chiefly to ignorance on this subject.

He had time only to allude to the third, yet most important consideration, the nature and application of the manure itself. In some parts of England, where much seed wheat is raised, and where seeds of vegetables and herbs, are grown to a large extent, he had seen compost heaps formed as follows :—a layer of four or five inches of good loam and turf, then about eight to twelve inches seaweed, carted up fresh from the beach, then an equal quantity of farm-yard manure, then loam again, and these layers repeated, until the mass was several feet high, the last layer being loam and turf. This is left eight or twelve months, to decompose, is turned over and applied to the land. The grains raised are large, plump, beautiful and heavy. Now, here the ingredients are, clayey loam to absorb, seaweed, containing soda, and a good proportion of the phosphates, and the barnyard manure, which, besides its soluble salts, contains ammonia ; its solid parts are, by fermentation, converted into charcoal and humus, which absorb the ammonia, and preserve it for the use of the crops ; the whole mass being well protected by an ample covering of turf and loam. Here, then, is not only nearly every ingredient the plant requires, but also, the store-houses of alumina and charcoal, from which it fetches its food, as wanted. He alluded to a discussion on the subject, whether manure was better used in a green state, or after it had been kept a year or more, and had become a black saponaceous mass. The question appeared to be settled in favor of this latter state, and this agreed with his own experience. If a manure heap be fermented under a good cover, it is converted into a black, carbonaceous mass, containing nearly all the ammonia, condensed in its pores, and is a most powerful manure.

SECOND EVENING.

He wished now, in the most concise manner possible, to give his ideas on the separate value to vegetation, of some of the ingredients of manures—and here, as before, he would omit all detail of the various experiments on which he had formed his judgment, merely offering these remarks, as his own opinions on this subject, which, however, he could not help considering of much importance.

Ammonia, he considered as the great promoter of luxuriant growth of stem and leaves; by its means, a large surface of healthy, dark-green vegetation is produced, which, exposed to the action of the atmosphere and light, matures the various juices, such as gum, starch, sugar, &c. contained in the plant. But all the ammonia which can be got into a crop, unless there be also, abundance of the phosphates, sulphates, and other inorganic substances, will give nothing but a worthless vegetation, and no grain, of value. Those who have raised crops, by the application of nitrate of soda alone, unless the soil contained, of itself, a sufficiency of these inorganic salts, have found, that, however beautiful they appeared when green, they were comparatively of little value when dried.

So, with trees, superabundance of ammoniacal manure will give beautiful looking, thick, long shoots; but they will be spongy, long-jointed, and will neither bear fruit in quantity or quality, at all resembling those which are manured with abundance of inorganic salts, combined with the ammonia. In these latter, the shoots are hard, very short-jointed, and full of fertile blossom buds; the fruit also has a much better flavor, although perhaps, not quite so large as the other. The reverse of this, is also true, that inorganic salts alone, without ammonia, to give a healthy breadth of vegetable surface to the maturing influences of the light and air, will afford nothing but barrenness. This, he had repeatedly proved, and preserved specimens of various growths. It seems very easy to comprehend that, if a tree, or other plant, has all the requisite ingredients to feed on, as soon as the light and air induce, in the juices, the necessary changes of ripening, a bud, (blossom, or otherwise,) is formed, vegetation proceeds; in another short space, another bud is formed. Now, if one or other of these ingredients are insufficiently supplied, vegetation must go on, until, from this niggardly supply, sufficient thereof is obtained to form a bud. Ammonia increases the vegetable growth rapidly, and this continues until sufficient inorganic salts are procured thereby, to form first, a leaf-bud, or, if more is procured, a blossom-bud; if, in forming a blossom-bud, these salts are exhausted, leaf-buds will next be formed, until the supply is again obtained for blossoms. He had

made many experiments with flowers and their seeds, which appeared to him to confirm these views thoroughly, but still he merely offered them as his own individual opinions.

Dr. Krocke, in Giessen, had analyzed many soils, some from the western parts of this country, in all, he had found large quantities of ammonia salts, in some, as much as eight thousand pounds to the acre twelve inches deep, from these experiments, an opinion had prevailed, and was now held by many, that it was quite unnecessary to put ammoniacal manures on the soil. Now, theory alone, unless confirmed by practice, was not only useless, but injurious. Large quantities of inorganic salts were prepared in England, with exact instructions from Liebig, under the idea that they alone were necessary to produce luxuriant crops, but they had failed, in every instance of application. And nearly all the artificial manures there manufactured, and it was now a large business, contained ammonia in some shape or other. It is, however, not to be doubted, that large quantities of ammonia come down with the rain and snow, and, when these fall heavily, some portion of the ammoniacal salts are washed down below the influence of the heat of the sun, and thus become permanently stored in some subsoils; these, when brought to the surface by the subsoil plough, exhibit very luxuriant crops. The ammonia, however, of moderate, summer rains, is either used by the crops, or is raised from the surface, by evaporation, to return again in the next shower. The variations of soils and circumstances, however, had led him not to trust implicitly in any general, scientific theories, unless confirmed by very numerous and very well authenticated experiments.

THIRD EVENING.

At the period of the commencement of the application of science to agriculture, the scientific calculation was as follows:—If the farmer sells annually, the produce of his farm, say, hay, grain, milk, butter, cheese, calves, hogs, &c., he carries from that land more produce than he can restore to it, in the shape of manure, from his own farm, and the land must be soon exhausted, unless he buys manure—and the calculation appeared very fair. But practice, as well as theory, had shown it to be erro-

neous. He had only to refer to the lucid and interesting statement of Hon. Mr. Brooks, to show that, even with the sale of his produce, he had increased his manure to superabundance. How had he done it? He had carefully saved every particle of urine and fæces, and all rubbish and offal on his premises, and, to mix with and absorb this, he had carted loads of stuff from his peat bog. Now this peat muck, called by chemists, under various names, as *geine*, *humus*, coal of *humus*, vegetable mould, is, as far as regards agriculture, *charcoal*, the absorbent, the storehouse of ammonia. Mr. Brooks's next process is, to pare his meadow, burn these parings, and mix them also with the urine and fæces. Now here is another storehouse, both of ammonia, and of inorganic salts, and nothing is lost, as it used to be; all is stored up for use. Every horticulturist, who has grown plants in garden pots, which are nothing but burnt clay, the same as Mr. Brooks's burnt parings, knows, that the roots of plants leave the soil in the centre of the pot, and push for the sides of the pot itself, and why? Because the salts, dissolved by watering the plants, have been absorbed by the burnt clay, and there the roots go to find their nourishment. These storehouses, also, absorb the ammonia, which comes down in rain and snow, as well as the inorganic salts, arising from the annual disintegration of stones and rocks.

A preference has been stated for plaster, as an absorbent of ammonia, because plaster is a manure, which charcoal is not. Plaster may be, and, in some cases, not the majority certainly, is a manure; by the absorption of ammonia, it becomes sulphate of ammonia and lime. Now one hundred parts of sulphate of ammonia contain about sixty parts of sulphuric acid, not very advantageous to vegetation, about twenty-six parts of ammonia, and about fourteen parts of water. Charcoal can condense in its pores about ninety parts in bulk of ammonia. Plaster is an excellent material to strew in stables, where many horses are kept, as it destroys all noxious effluvia, and it is then, unquestionably a good manure, but it appears far inferior to charcoal, as an absorbent, and certainly where plenty of peat muck exists, it is bad economy to purchase it for this purpose.

The notes read by Mr. Newhall, of his observations on his

manure composts, are very interesting, if every agriculturist would make such notes, and place them where men of science could have access to them, they would soon be classified, sifted out, and compared; this would unquestionably lead to generalizations of some importance to agriculture.

A desire, in which every one must cordially join, has been expressed for definite experiments in agriculture. In order to have definite experiments, however, it is necessary to work with definite compounds, and this, with the immense diversity of soils, although not absolutely impossible, is difficult. A farmer may, year after year, add seaweed to his manure composts, and always produce excellent crops; if, to spare labor or expense for one year, he omits this ingredient, he may still have as good crops, nay, even a second year; then, from this, which he considers a *definite* experiment, he will conclude seaweed to be of no use. The third year, another may be in possession of the farm, and, having heard of seaweed, determines to try it on half the land, the other half without. From that half manured with seaweed he obtains much better crops than from the other, and he concludes, from this *definite* experiment, that seaweed is a valuable manure. Now, the probable truth would be, that, from the seaweed put on, there had been a superabundance of phosphates and other inorganic salts, enough to supply the crops, for the two years, and that then a fresh addition of them was required. No doubt this case often occurs in the application of lime and plaster, and has caused so much diversity of opinion.

But definite experiments, though difficult, are not absolutely impossible; for instance, that stated by the president, at Sandusky, Ohio, where, on a breadth of twenty or thirty acres, fifty bushels charcoal were spread per acre, on land hitherto barren, with intervening spaces, where none was used. The spots with charcoal gave from twenty to twenty-five bushels wheat per acre, those without, from three to five bushels per acre.

There is, however, one definite experiment of the utmost importance, to be tried; it is the experiment of establishing agricultural schools, and experimental farms throughout this vast and flourishing agricultural country. What is the reason why youth pant after commerce or the learned professions? It is

because they require the exercise of the utmost energy of the mind, and this exercise is precisely what youth demand; the want of it drives them into all kinds of foolish excesses; for, the desire for it is invincibly strong, and will be gratified. Now, is it not possible to divert these energies of the mind to the successful pursuit of agriculture? The experience of other nations answers, yes, but only by the preparation of a previous, suitable education, of the first order. Young men generally consider a farmer as a mere machine, a plough, a cart, or a hoe, with nothing to do but what their fathers did before them. Will these ideas apply to any other industrial pursuit, or any other profession? Had they been so applied, the railroad, the steamboat, the electric telegraph, had still been unknown—and, as long as these ideas exist amongst them, so long will the best of our agricultural population flock to the cities, and many a fine mind be irretrievably lost.

REMARKS BY M. P. WILDER.

[At the same meetings of the Legislative Society, at which Mr. Teschemacher made the foregoing remarks, HON. M. P. WILDER, the President, made the subjoined statement of his own experience, in the making and applying of manures.]

Mr. Wilder said that he was no chemist, and made no pretensions to farming, except, as it is connected with gardening and the horticultural art.

He had made some experiments with manures, some of which he would relate:—He did not wish it to be understood, that he undervalued stable or barnyard manure; but such as was purchased from the stables of the city, by the cord, when deprived of straw, or decomposed, was, in reality, only half or three-fourths of a cord. To obtain a real solid cord of manure, equal in quality, and at less price, had, with him, been a great desideratum, and he believed he had succeeded, by making a compost of meadow muck, crushed bones, and leached ashes, in the following proportions:—

One cord of meadow muck, having been exposed to the action of air and frost, at least one year,	\$1 50
Twelve bushels of leached ashes,	1 20
Six bushels crushed bones,	1 50
Labor,	30
Total cost per cord,	<hr/> \$4 50

The bones and ashes were mixed together, while the latter were in a damp state; and, when fermentation had taken place, these were incorporated with the meadow muck. In this condition, the mass should remain, until heat is generated again, when it will be fit for use.

He had found this compost equal to any stable manure for root crops, grass land, gardening purposes generally, and for fruit trees. For the last two years, he had mixed his stable manure with the compost, and also had added to it, one-eighth part in bulk, of fine refuse charcoal, from the depots of venders. This can be purchased at five dollars the cord, delivered, and does not much increase the cost above named.

Since Liebig first promulgated his opinion, as to the wonderful influence of charcoal, in rooting cuttings of plants, and as a component part of soils, experiments have been making, verifying its importance. He also informs us, that the volatile gas, which arises from our stables and manure heaps, and descends in the rain and snow, and which we call "ammonia," is the great fertilizer of the earth. To secure this subtle element, Mr. Wilder had added charcoal to his compost heap, and, as he thought, with great advantage. It is very durable, if not indestructible; a substance of great porosity, and we are told, he said, by chemists, that it will absorb ninety per cent. of its bulk of ammonia; but its beneficial effects are supposed to arise from its power of retaining this volatile gas, and yielding it up only, as it is washed out by rains, or as the vital force of the root searches for food. He did not consider it a fertilizer in itself, but that it was a medium of administering nourishment, having used it with good success, for greenhouse plants, for many seasons.

Mr. Wilder said the compost—with the charcoal and stable manures combined—was the best he had ever used, as a general manure. * On fruit trees, its effects were remarkable.

In the spring of 1847, he planted a square in his nursery, with imported trees from England, this compost having been spread and ploughed in. These trees were from four to five feet in height, and, although it is not usual for trees to make a large growth the first year, they acquired branches of three to four feet, and were so handsome as to command one dollar twenty-five cents each, for a row of fifty trees, without any selection.

In June last, which is very late to set out trees, he prepared another square, on rather poor land, and planted trees, just received from England, upon it. The soil had been thrown up to the frost the previous winter, and the compost here was applied in the trenches, near the roots. Mr. Wilder exhibited two shoots, which had grown from those trees, since they were set out in June. The shoots were four feet in length, and the wood hard, and well ripened.

It is stated, that, on old beds, where charcoal had been burned ten years before, the corn and wheat, to this day, are uniformly better than on the adjoining lands, being more vigorous, of a darker green color, and producing larger crops. A farmer remarks:—"I sowed fine charcoal over my land, in strips. These strips have increased one-half in product, and without any apparent diminution, for five years."

Mr. Wilder mentioned several instances, showing the beneficial effects arising from the use of fine charcoal, one of which, in the State of New York, was an extraordinary product of wheat.

Says an English gardener:—"My composts consist of nothing but loam and charcoal, without a particle of manure, of any sort; and I never saw the plant that did not delight in it, and every plant under my care, has some charcoal used about it."

As a deodorant, or disinfectant, Mr. Wilder related the following experiment, which appeared in a late English paper:—

"Two fluids, and charcoal from peat, were prepared especially, by different chemists, for the purpose of depriving night-soil, stable, and pig-stye manures, of their offensive smell. The fluids both proved ineffectual, but the charcoal not only instantly neutralized, and destroyed the offensive odors, in each of these substances, but also deodorized the fluids themselves."

REMARKS BY M. P. WILDER.

[At the ninth meeting of the Legislative Society, Mr. WILDER, the President, made the remarks which follow, on the subject of *fruit* and *fruit trees* :—]

Formerly, the cultivation of the finer fruits was limited to the gardens of the opulent, or to the immediate proximity of a market, but the multiplied facilities of intercourse and transportation, the emulation excited by horticultural exhibitions and conventions, and the increasing importance of this product, in a commercial point of view, have awakened an interest which has spread as with magnetic speed, throughout our land. Thousands of trees are planted, instead of dozens: orchards and gardens, on the most extensive scale, have been commenced, and so generally has this taste been diffused in our vicinity, that the cottage, even of the most humble laborer, without its fruit tree or grape vine, would almost be considered an anomaly. Amateurs and nursery-men have congregated into their collections hundreds of varieties for trial; and, so great is this enthusiasm, or mania, that the cry is not simply, "who will show us any good," but who will show us any thing *new*? Fears have been expressed, that this *fruit-growing mania* would overstock the market, but thus far it has tended to foster a taste for better quality, better specimens, and to augment rather than to diminish the price.

In no part of the world is this enterprise crowned with better success than in our own. The fame of American fruit is already proverbial in foreign markets, and the day is not distant, when, in addition to the enormous consumption at home, we shall supply England, not only with the finest apples, but also, with the finest pears.

A gentleman, (P. Barry, Esq., of Rochester, N. Y.,) who has just returned from Europe, remarks, that, in the English market, there will be an "unfailing demand for the products of our orchards," that apples, such as would scarcely sell at home, were there cried up, as "nice American apples," "beautiful American apples," and brought from three to six cents each. Mr. B. says

he examined, in the fruit rooms of the London Horticultural Society, "two hundred to three hundred varieties of fruit, and that there was not a single large, clear, well-colored specimen among them." The same gentleman took out with him specimens of the Northern Spy apple, (which we now have before us,) and some other varieties; they elicited the admiration of all, and indeed, says he, "there are no such apples in England."

With the zeal so generally manifested on this subject, it becomes a matter of importance to ascertain the best mode of cultivation; but, so much has already been published on the soil, management, and selection of fruit trees, that I can hardly expect to add any thing new. There are, however, some considerations, "that lie at the root of the matter," and which, it is believed, must be adopted, as a *sine qua non*, to ensure success, viz:—

1. The selection of such sorts, *and only such*, as by uniformity of character, in various localities, *particularly our own*, have, after a trial of years, been proved to be hardy, productive, and of excellent quality.

2. The right soil, and the proper preparation of it.

3. The appropriate manure.

Much disappointment has been experienced, by selecting varieties from their high-sounding names and novelty, rather than from any *known* superiority of character. To avoid this prevalent error, and in compliance with frequent requests, I submit a list in the various classes of fruits, which, from the united experience of cultivators, appears well adapted to our region, and to possess generally, the characteristics alluded to; and, to make this as useful as possible, I have graduated it to limited selections for small gardens —

APPLES.

For three varieties: Large Early Bough, Gravenstein, Baldwin.

For six varieties, add: Red Astrachan, Porter, Rhode Island Greening.

For twelve varieties, add: Early Harvest, Williams, Fall Harvey, Minister, Hubbardston Nonsuch, Roxbury Russet.

For Winter Sweet Apples: Danvers Winter Sweet, Seaver Sweet, Tolman Sweet.

Our country abounds with native varieties of apples, and there are, no doubt, many others equal or superior to the foreign sorts, but which have not been so generally tested. Among those of high reputation, are the Northern Spy, Melon, Mother, Magnolia, Foundling, Jewett's Red, Twenty Ounce, and the Ladies' Sweeting, which last now before us, should it prosper in our soils, will take high rank as a very late keeper, and superb fruit.

PEARS.

For three varieties: Williams's Bon Chrétien, or Bartlett, Vicar of Winkfield, Beurré d'Aremberg.

For six varieties, add: Bloodgood, Louise Bonne de Jersey, Flemish Beauty.

For twelve varieties, add: Seckel, Fondante d'Automne, Urbaniste, Golden Beurré of Bilboa, Beurré Bosc, Winter Nelis.

For eighteen varieties, add: Dearborn's Seedling, Andrews, Tyson, Heathcot, Long Green, Buffum.

For new foreign varieties, of good promise, and partially proved: Beurré d'Anjou, Paradise d'Automne, Doyenné Boussock, Duchesse d'Orleans, Jalousie de Fontenay Vendee, St. Andre.

For new native varieties, of high reputation, the Pratt, Westcott, Abbott, Ott's Seedling, Brandywine, Leach's Kingessing, Howell.

PEACHES.

For three varieties: Early York, (serrated leaf,) Crawford's Early, Old Mixon Freestone.

For six varieties, add: George Fourth, Grosse Mignonne, Crawford's Late.

For twelve varieties, add: Walter's Early, Nivette, Bergen's Yellow, Late Admirable, Jacques, Old Mixon Clingstone.

CHEERRIES.

For three varieties: May Duke, Black Tartarian, Downer's Late.

For six varieties, add: Black Eagle, Elton, Downton.

For twelve varieties, add: Knight's Early Black, Graffion, or Bigarreau, Sweet Montmorency, Sparhawk's Honey, Couleur de Chair, Late Duke.

PLUMS.

For three varieties : Green Gage, Jefferson, Washington.

For six varieties, add : Lawrence's Favorite, Purple Gage, Imperial Gage.

For twelve varieties, add : Bingham, Bleeker's Gage, Yellow Gage, Red Gage, Smith's Orleans, Royale Hative.

The President closed by saying, that, having occupied his share of the time, the other points alluded to would be deferred to another opportunity.

REMARKS ON THE SUBJECT OF FRUIT AND FRUIT TREES.

[At the tenth meeting of the Legislative Society, the subject of "Fruit and Fruit Trees," was further discussed. The following are among the Remarks made :—]

The president, Mr. WILDER, said, in reference to *the proper preparation of the soil*; one of the greatest and most disastrous errors, in the preparation of the ground, for trees, has been the too prevalent practice of digging *simply* a hole, (and I use this term in a double sense,) either of the exact dimensions of the roots, or one into which they could be crowded. Fortunately, more enlarged views are now entertained, by intelligent cultivators, and with them there is no difference of opinion on the subject. All agree that the *proper* and only judicious method is the sub-soiling, or trenching of the earth, to the depth of eighteen inches or two feet, and that, during this process, the upper and lower soils, together with the appropriate manure, should be thoroughly incorporated; and the cultivator who is not willing to take these preliminary measures, had better abandon the project of growing fruit trees, and save both his time and money.

By the adoption of the system recommended, the work will not only be "well done," but one tree will produce more than five, with ordinary treatment, and will not require more than common tillage, until it commences fruiting, and then *only*, when, by the imperfection of the fruit, warning is given, that the necessary ingredients of fertilization have been exhausted from the soil.

The appropriate manures. Much has been written, of late, on the subject of *special manures*, that is, the adaptation of an appropriate fertilizer, to each class of vegetation—and I entertain no doubt, that the great secret of successful cultivation, so far as manure is concerned, is the application of the *right sort*, to each particular crop. Chemists tell us that for wheat we want *lime*; for turnips, *phosphate of lime*, *bone dust*; and, for the leguminous plants, peas, beans, &c., *gypsum*, (plaster of Paris.) They also inform us, that the ashes of trees and plants contain the ingredients which constitute the food they require, and that it can be administered with almost as much precision, as that given to sustain and nourish the animal system. What then, is the *appropriate manure* for fruit trees?

By the analysis of Dr. Emmons, it is found, that the bark and sapwood of the apple tree are composed of more than one-half *lime*, one-fifth *potash*, and about one-sixth *phosphate of lime*; therefore, the compost for the apple should consist largely of *lime*, and less of *potash* and *bones*.

The analysis of the bark and sapwood of the pear tree shows that the ashes contain nearly one-third part *phosphate of lime*, more than one-fourth *potash*, and about one-third *lime*; and, following out this theory, the compost for the pear should consist more largely of *bones* and *potash*, than for the apple.

This view of the subject might be further illustrated, but sufficient experiments have already been made, to establish the importance of *specific manures*, not only for fruit trees, but for crops generally; and from soils worn out by continued cropping, or from our old orchards and gardens, where the proper fertilizing substances have been exhausted, although overloaded with other manures, we cannot expect a favorable result, either as it regards the health of the tree, or the perfection of its fruit.

A French chemist had received a medal, for the discovery of a method of preventing the early defoliation of trees, particularly the young pear stocks in nurseries—this was a weak solution of *sulphate of iron* (copperas;) the *oxide of iron* had also been named as a specific, both for the premature falling of the leaf, and for the restoration to health of worn-out pear trees. He had made experiments with both, and entertained a favorable opinion of their effect.

Col. Wilder closed by remarking that he had, for many years, used, for fruit trees, the compost alluded to in the discussion on manures, viz. : *meadow muck, leached ashes, and crushed bones*; that, where these could not easily be obtained, no better manure could be had, than *wood ashes*, containing, as they do, both potash and lime.

Mr. BARTLETT, editor of the *Cultivator*, confined his remarks to the subject of appropriate manures :—

A fertile upland soil, cleared of its first growth by burning, with the ashes left upon the surface, and the roots beneath, as sustenance for the new tree, was the best soil for a nursery. The materials required in the growth of the young trees already existed at hand. But, as time passes on, these materials are exhausted ; the potash, lime, and phosphoric acid, enter into the composition of the wood and bark of the tree. Dr. Emmons had shown, from the analysis of the ashes of the apple, pear and grape vine, that lime, potash and phosphoric acid, entered into their composition, in certain definite proportions. In addition to this, the leaves also consumed large quantities of the ingredients existing in the soil. The dry leaves of the elm contain eleven per cent. of mineral matter, while the wood contains only two per cent. ; the leaves of the beech contain seven per cent. of mineral matter, while the wood contains only one-third of one per cent. Fruit supplies the organic substances for the support of animal life—and the constant drafts upon the soil impoverish it. Now the great problem to be solved is—what is the best manner to keep up the growth of the tree, and restore the powers of the soil, which have been nearly exhausted ?

Dr. Emmons, Beecher, and other authors, by their investigations and writings, have done much towards affording a solution to this problem. It is well known, that each species of the animal kingdom requires different food for its nourishment and support. For example, the cow and the dog will not subsist upon the same food. Now it is not the less true, that the field requires food, and food suited to the crop which is raised upon it.—Plants, nourished or manured with the ashes of the same plant, will flourish, as they are then supplied with the materials

which nature demands. Liebig lays this down as a truth. Our prairie and forest lands furnish a good illustration in point. They are never impoverished, their fertility never dies out, and because the materials which are required for the growth of the grass or tree, are furnished by the decay of the leaves, &c. of the tree, and the fruit and spears of grass. Thus, for the orchard, the ashes, leaves and pumice furnish the best manure, as they contain all the ingredients which enter into the growth of the apple. But these materials may not exist in sufficient quantities, and then resort must be had to composts or other manures. Stable manure will do well, but it is so stimulating, that the wood does not ripen well.

The gentleman had, upon one occasion, used a large quantity of this kind of manure upon his fruit trees.—There was a rapid and apparently thrifty growth of the trees, but yet the wood did not ripen; the cold of the succeeding winter killed a great many of them. The speaker concluded with the observation, that the time was not far distant, when the cultivation of fruit trees would be infinitely better understood, than it has been in times past, but that this knowledge would only be gained through the union of science and practice.

Mr. Rice, of Newton.—Can we prevent the yellows on the peach tree? The speaker had seen recommended an application of urine as a good remedy for this disease. He had tried the experiment upon an orchard, of about three hundred trees—say, one-half of a pailful to each tree—and, out of the three hundred, he had lost only two. One tree, nearly dead, certainly revived, after the application. He thought that the suggestion was worthy of consideration.

Can any thing be done to save our peach buds? He had examined his trees, this spring, and found nearly all the embryo blossoms destroyed. Many contend, that these buds are killed, in consequence of very warm weather in the fall, or early part of winter, being succeeded immediately by severe cold. The President observed that the cherry blossoms, or many of them, were destroyed.

Many orchards, continued Mr. Rice, are lost, from a want of

care and cultivation. Some set out their trees, and there leave them; but an orchard requires as much attention as a corn-field. Mr. Rice had sent his fruit abroad for a market, and the average return had been above the price of Boston market. Such was the demand for American fruit, that cultivators need not fear that the market will ever be overstocked.

Major WHEELER, of Framingham, thought, that the best remedy for the yellows was careful cultivation—that bad cultivation caused them. The peach is a great bearer, and thrives vigorously for a time; and then it is neglected, until disease has firmly seated itself. He did not doubt, that proper attention would ensure, to this tree, a long life in this country. In France, peach trees, a hundred years old, bear excellent fruit.

The cause of the destruction of the peach bud was extreme cold weather, and not warm and cold weather, immediately succeeding each other. Observations, extended through a long series of years, had convinced him that this was the case. It was well known, that it is colder upon low, marshy grounds, than upon the hills; the buds of the peach growing upon the hills have not been injured, while those of the peach growing in the immediate neighborhood, on low lands, have been entirely destroyed. The hill sides formed the best site for a peach orchard.

For forty years, Major Wheeler had cultivated the apple tree, and had never been troubled with the borer. He was accustomed to wash his trees in a strong lye—say, two pounds of potash to a pailful of water. The caterpillar, he destroyed with the brush and the hand. He did not stake his trees, when setting them out; did not water them; and did not use litter, although it was undoubtedly very good as a fertilizer. He dug a hole two feet deep, and some five or six in circumference—placed a good tree from a good nursery in it, and seldom lost a tree, from transplanting.

In answer to a question, Major Wheeler said, that the buds of his peach trees were nearly all destroyed. Those of his neighbors, upon higher and more favorable ground, he had not examined. He had ascertained, that, when the thermometer sank as low as ten degrees below zero, the buds were generally killed.

The **PRESIDENT** remarked, he was of the same opinion as **Major Wheeler**, that extreme cold weather killed the buds. His peaches were planted upon a dry, gravelly soil, with a northerly exposure, and the buds were nearly all killed. Many of the cherry blossoms were also destroyed. The winter has been a remarkably cold one. (It was suggested by a gentleman present that we had quite warm weather in December, which was succeeded by severe cold.)

Major Wheeler remarked, that, four or five years since, we had very warm weather in February, so much so that the peach blossom opened on the 10th of March. After that time, we had severe, cold, and heavy snow storms, and still the peach bore most abundantly that year.

Mr. SAMUEL WALKER, of Roxbury, (President of the Massachusetts Horticultural Society) thought, that the subject of manure and transplanting was of great importance. The first thing to be done, in transplanting, was, to properly prepare the soil, by trenching, incorporating the loam with the subsoil, and supplying the appropriate manure. *There was no necessity for special manures until the powers of the soil had been exhausted.*

Regard must also be had to the kind of soil, its location on high or low land, its exposure, &c. **Mr. Walker** would admit, that peaches grow best on high lands. The trees must be adapted to the soil, and the fruit must be selected with a view to the market which is to be supplied. **Mr. Walker** thought, that fruit-growers make a great mistake, in multiplying varieties; this would do well enough for amateurs, but it was very unprofitable business for the farmer. He proceeded to speak of the varieties of the apple, which he thought it most profitable for the farmer to cultivate. First, was the Rhode Island Greening, a good second-rate fruit, which adapts itself readily to most soils, and is in good order for the table, from November to April. It was, by no means, the best apple that could be named, but its combined qualities rendered it exceedingly valuable for cultivation in this state. Then comes the Gravenstein, in good order for cooking and eating, as early as the month of

August, and continues so for eight or ten weeks. It is an apple now little known, but it will, at no distant period, come into very general favor. Then there is the Baldwin, well known for its many good qualities. With these three varieties, remarked Mr. Walker, I could make more money than with one hundred varieties. The gentleman made some remarks upon the demand which exists in all quarters of the globe for American fruit, and he thought this demand should furnish sufficient inducement for its extensive cultivation.

The Hon. MR. RUSSELL was accustomed to keep his apples well barreled in the coldest place he could find in his buildings, provided it was not so cold as to cause them to freeze. He exhibited russet apples, which had been kept for one year and a half, and sweet apples which had been kept for two years, perfectly sound and in admirable condition. He took care that no water should be near where his apples were placed.

Col. HUBBELL, of Lanesborough, stated, that he preserved apples, by placing them in barrels: the apples are stowed away, in oat chaff, with a considerable sprinkling of *air-slacked lime*: the preservation is very complete; and the flavor of the apple is retained fully. Any other kind of chaff, sawdust, and other similar, dry substances will answer as well as oat chaff.

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TRANSACTIONS
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IN THE
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FOR THE YEAR 1849.

COLLATED FROM THE ORIGINAL RETURNS
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Recd of Mr. B. Calhoun

Secretary of the Commonwealth

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ABSTRACT.

MASS. SOCIETY FOR PROMOTING AGRICULTURE.

THE President and Secretary of the Massachusetts Society for Promoting Agriculture, respectfully report, in obedience to the requisitions of the Legislature, that on an examination of the records of the board of trustees for the year past, it appears, that their exertions in the cause of agriculture, continue concentrated on the objects stated in their former reports, for the four preceding years, that of introducing and distributing the best breed, or breeds of milking cows, those which have been, and are most esteemed, after the test of many years, by the best farmers in England. Their object has been so far accomplished as to offer to each county society, one bull and one cow, or heifer calf of the full blood, of either the Ayrshire, or the North Devon breed. The farmers of each county society, which has been willing to make the experiment, are, or will be furnished, free of expense, with a male and female of the same breed, Ayrshire or Devon, as may have been appropriated to them, or may have been selected by them. If it be *in the spirit of farmers to preserve a breed unmixed*, an opportunity is given to each society, or fountain head, so to distribute them, as that, in a few years, they may give a character to the stock of their respective counties.

The records also, express the sense of the board, at the loss sustained by the friends of agriculture, as well as by the community in general, in the death of their late associate, Elias Phin-

ney, Esq. The high character of this gentleman, the place which he held in the respect and confidence of all who knew him, and his enthusiasm and perseverance in behalf of the great cause of agriculture, are too generally understood, to render any addition to this simple reference necessary.

Shortly after the death of Mr. Phinney, a committee was appointed to examine the state of the society's stock at Lexington, with authority, if they thought best, to sell the native stock, with the cross breeds derived from them, which they reported to have been done. More recently, a committee was appointed to take into consideration the expediency, of selling all of the stock belonging to the society, remaining after the distribution to each county society, of one pair of the same breed, of full blood, which will probably be completed before the first of April, next. The committee reported in favor of a sale, and upon the condition that the animals be retained within the Commonwealth.

Dr. Warren, chairman of the committee on the diseases of animals, reported, that Dr. Brooks, with whom he had corresponded while he was in Paris, in 1846, and who had, at the request of the committee, examined the veterinary institutions of France, had now returned, and proposed, at the request of the committee, to deliver a course of four lectures, during the month of February, next. Dr. Warren suggested, as the lectures would be delivered during the session of the Legislature, application should be made for the use of the chamber of the House of Representatives for that purpose.

Each county society now pursues the course commenced more than thirty-three years ago, by the Massachusetts Society, to encourage the industry and stimulate the ingenuity of the farmers in the offer of premiums, and an opportunity of exhibiting the result of their labors and their inventions. The better knowledge of the habits and requirements of the immediate neighborhood, the better knowledge of the soil and markets of their respective counties, with the fact that the places of exhibition are not far from any competitor, give to these smaller circles, much larger opportunities of offering judiciously, and awarding carefully, than could ever have been had by the

Massachusetts Society, whose offers extended always, over the Commonwealth, and on *some subjects*, as for instance, the cause of injury to forest and fruit trees, or the discovery of a preventive, the offer extended over the whole of New England.

Respectfully,

JOHN C. GRAY, *President*,
BENJ. GUILD, *Secretary*.

Boston, *December 28th*, 1849.

The Report of Mr. G. P. Phinney, son of the late Elias Phinney, and with whom the stock still remains, states the number of the Ayrshire breed to be seventeen, and of the Devon, fourteen.

There have been distributed to

Middlesex County Agricultural Society,	1	North Devon Bull.
Berkshire " " " "	1	" " "
Hampshire and Franklin " "	1	Ayrshire "
Worcester County " "	1	" "
" " " " and	1	North Devon "
Essex " " " "	1	Ayrshire "
Bristol " " " "	1	North Devon "
Hampden " " " "	1	Ayrshire "
Barnstable " " " "	1	" "
Plymouth, " " " "	1	" "

From these societies, no returns have been made, although the certificate of their receipt of the animals, contained the condition of an annual report.

ESSEX AGRICULTURAL SOCIETY.

THE annual cattle show and fair of this society, took place at Salem, on Thursday, the 26th of September last. The day was unexceptionably bright and beautiful; the rain of the preceding night having put all things in the most desirable order for the festival. The Mechanics' Fair, which was held on the same day, gave an additional attraction to it. The concourse of people was immense, surpassing any thing ever before seen in that city. In all its departments, the exhibition was one of the most successful ever held under the auspices of this society. The address was delivered by the Hon. Asa T. Newhall, of Lynnfield.

During the past year, the society, having purchased the valuable agricultural books belonging to the late Rev. Henry Colman, has established a library for the use of its members. These, with other books in its possession, and those contributed by individuals, form a collection of six hundred volumes; to which, it is believed that additions will, from time to time, be made, by the friends of the institution. But to insure a permanent increase to the library, all unclaimed premiums and gratuities, from year to year, have been appropriated by the trustees, to this object.

ON THE DAIRY.

The committee were gratified to find so many entries, and such fine specimens of butter. The parcels were entered, as required, by the numbers only, and were examined without any knowledge of the persons by whom they were made. The several parcels of June butter were first compared with each other, and the several parcels of September butter, likewise. After the opinion of the committee was made up, upon the specimens presented, the several statements were examined and compared. Although there were found to be important differ-

ences in the quantities produced in different statements, still, there was no sufficient reason to vary the awards, as made upon the quality. Some of the statements were found to be not in strict conformity with the conditions on which the premiums were offered ; but no material variations were noticed, in those of the successful claimants. Our premiums are offered "*for the best produce on the farm,*" and not simply for the best specimens exhibited.

It is expected of the claimants, to state distinctly the amount produced in the month of June ; and also, in the *four months* next following the 20th of May. It is highly important, that all the particulars in the management, from the first milking of the cow, to the moulding of the butter for the market, should be carefully noted. If these facts could be presented in a journal form, so that the feed of each week, and the produce of each week, could be distinctly seen and compared, it would be a source of much instruction.

The design of requiring statements for particular periods of time, is, that all statements should have reference to the same period, so that they may, with propriety, be compared together. If, for instance, one person takes fifty days, from May 20th to July 10th, and another fourteen days, from June 10th to June 24th, there can be no fair comparison between the two. We can easily conceive of such an arrangement of the pastures, and of the feed of the cows, for a period of *fourteen days*, as would show a very different result from what could be produced in *fifty days*. These facts are adverted to, because some of the statements are made in this manner. We want no forced statements,—we care not how good they may be,—but we want them in the ordinary way ; we want to see the whole truth, without any artificial appliances. Such statements not only vary from the rule prescribed, but they present, also, insuperable difficulties in the way of just estimates. Claimants should understand, if they would expect others to judge *rightly* of their claims, they must *begin right* in their statements. It is not enough for them to say, that the offer of the premium is not made exactly as it should be ; when they present their claims, they assent to the propriety of the offer.

There are many facts, in relation to the making of butter, of great importance, to be distinctly noted. Instance, from some we learn, that the quantity of butter is materially influenced by the manner of milking the cows,—by being careful entirely to exhaust the bag at each milking; *one pint*, at the close, being said to be of as much value as *four* at the *commencement*.

It is presumed that there is a certain point of time, after the milk has been set, when the cream can be severed from the milk to the best advantage. We have looked through the statements, to ascertain when this is. We find them varying from twenty-four to seventy-two hours; about as definite as the size of a *piece of chalk*. What is wanted, is a rule, for the guidance of those who shall undertake to manage the business, without having had experience. Without doubt, many of these successful butter-makers have the right rule in their mind, but have never yet so defined it, as to be able to convey it to others. The probability is, the longer the cream remains, the more there will be of it; but may it not remain so long, as to impair the quality of the butter? This may depend much upon the character of the *place where*, and the *vessels in which* it is set. Nearly all speak of setting the milk in *tin pans*;—*how deep* it shall be,—whether two, four, or six inches,—they do not say. All concur in assigning a clean, airy, and cool place, for the milk to be set in; and all concur in approving of entire cleanliness in all the departments.

What shall be done with the cream, after it is collected? Some place it in a bucket, in the well; others, in pots, in vaults constructed for the purpose. The best position we have noticed, is to have a neat apartment excavated below the ordinary cellar, and there to keep it, until the convenient time for churning. This should be as often as a sufficient quantity is accumulated, to be churned to advantage. The temperature of the cream, at the time of churning, is also to be considered. It is said, a temperature from 60° to 65° is the most favorable. If this be so, it should always be brought to this temperature, before the agitation of the cream is commenced.

Many of these little things, which a skilful manager of a dairy is accustomed to observe and practice, and which are

thought too trifling to be noticed, may, in fact, constitute the real differences between the making of good and ordinary butter. That such differences do exist, we see exemplified every week. Take, for instance, in any of our towns, two farmers, situated side by side, on lands similar; you will find one of these going into market, on Saturday, with butter soft and greasy, with small particles of buttermilk oozing out of it; while the butter of the other is in neatly formed lumps, hard and regular, of a bright yellow color; the one is slowly sold for a *shilling* a pound, when the other readily commands a *shilling and a half*, from purchasers much better satisfied with their bargains. Why this difference in price, unless it be in the management of the dairy? One of these farmers will be able to thrive and flourish, with painted buildings, and neatly arranged fences,—while the other will have his windows stuffed with rags, and his fences going to ruin.

It is not enough for claimants to say, in their statements, that *about* an ounce of salt is applied to each pound of butter, or, that it was salted to suit the taste. Such expressions afford no rule for the instruction of others. Tastes may vary, as much as hands in weight, or feet in measurement; and the word *about* has too much of the quality of *india rubber*, to fasten anything. For example, in the statements before us, there is a variance, in the quantity of salt used, of *one half*,—say from three-fourths of an ounce to one and a half ounces, to the pound. We are aware that there may be differences in the quality of the salt, and that the condition in which the butter *comes*, may at some times require more salt than at others, and consequently, that the judgment of the persons *working it* is to be exercised; but still, we think it is in their power to define how this judgment is to be applied; and this is the very thing we want to be informed about. These little peculiarities which enable good dairy maids to present the nicest of butter.

On looking over the statements presented, several difficulties occur in instituting a comparison. Some speak of *cows only*; others, of *cows and heifers*. Some speak of *old cows*; others, of *young cows*. What the fair proportion is, which a heifer bears to a cow, we have no certain means of determining; but

for convenience sake, we assume that *three heifers*, the first season in milk, may be reckoned equal to *two cows*. We are also embarrassed by the fact, that different families may consume very different quantities of milk and cream in the family. Ordinarily, we expect to find, on a well regulated New England farm, a man and wife, five children, a man servant, a maid servant, and a boy to drive the cows, &c.,—*ten in number*, for whose use the milk of one cow, at least, should be appropriated. There may be variances from this. There may be *bachelors*, who take care of their own dairies; but such care will never be considered as a recommendation for premium. Although their butter may be *sweet* in the *churn*, ten chances to one, it will be *rancid* before it comes to the *table*.

We present, in a tabular form, an abstract of the several statements, supplying deficiencies by the *best guesses* (exercising our privilege as Yankees) in our power to make.

Name.	Residence.	Cows	June, av. to a Cow.	Four Months av. to a Cow.	Total.
John Stone, Jr., -	Marblehead, -	4	45 lbs.	155 lbs.	620 lbs.
Daniel Putnam, -	Danvers, -	6	30 "	120 "	720 "
Elijah Pope, -	" -	4	28 "	111 "	444 "
Charles P. Preston, -	" -	7	30 "	112 "	784 "
George Pearson, -	Saugus, -	6	30 "	109 "	654 "
Nathaniel Felton, -	Danvers, -	8	32 "	110.5 lbs.	884 "
Jonathan Berry, -	Middleton, -	8	30 "	97.8 "	790 "
Duncan McNaughton, -	Byfield, -	5	25 "	94.5 "	490 "
John Preston, -	Danvers, -	4	26 "	91.5 "	366 "
Nathan D. Hawks, -	Lynnfield, -	4	25 "	85 "	340 "

This shows an average product of *one pound* to a cow, *daily*, through the month of June, and *seven-eighths of a pound, daily*, to a cow, for the four months from May 24th to September 24th.

When the extraordinary drought of the months of August and September are taken into view, as also the family consumption of milk before adverted to, it is but fair to say, that the statements presented the present season, give evidence of a production of *one pound of butter, daily*, for each cow, for the four best months of the season.

How this will compare with former years, is not distinctly in mind. We remember when the society first commenced their offer of premiums, Jesse Putnam, of Danvers, was successful in obtaining the first premium, and that his cows averaged a produce of two hundred pounds each, in a period of six months. This was thought a large product, and was accounted for by the extraordinary feed of the cows. We have known some of the present claimants, with whom we have been acquainted *as such*, for nearly *thirty years*, to present statements of a produce of eight pounds of butter a week, to each cow, for a successive number of weeks. These were among the best products, in the *natural way*, that we have known. We have often heard of cows that yielded two pounds of butter a day, and more, but we have never known a herd of such cows, or any considerable number together, that would do it, without using a feed for them that would cost "more than it came to." If such can be found, we should consider attention to such a stock, one of the best modes of using a farm.*

* In the Society's Transactions for 1834, pages 75 to 78, will be found an enumeration of cows most remarkable for their produce of butter. We refer to this with more satisfaction at the present time, because it was compiled by that eminent friend of the farmer, and especially the Essex farmer, the late HENRY COLMAN, whose indefatigable exertions for their instruction, too soon extinguished his light in a foreign land.

As a matter of curious information, we have collected, in a condensed form, the products of several of the most extraordinary cows in Massachusetts, that have come to our knowledge.

Date.	Name.	Place.	Weekly Produce.	Length of Time.
1826,	Oakes Cow, - - - -	Danvers, - -	16 lbs.	16 weeks.
1824,	Nourse Cow, - - - -	" - -	14 "	16 "
1828,	Sanderson Cow, - - - -	Waltham, - -	14 "	16 "
1830,	Homer's Cow, - - - -	Bedford, - -	14 "	12 "
1830,	Hazeltine Cow, - - - -	Haverhill, - -	14 "	12 "
1830,	Barrett Cow, - - - -	Northampton, -	15 "	12 "
1845,	Buxton Cow, - - - -	Danvers, - -	16 "	12 "

These cows show a product of more than two pounds per day, each, for a period of three months. We think it would be difficult to collect together such a herd.

On examining the products of Mr. Hall's Dairy, of Chemung county, who took the first premium in the New York State Society, 1846, we find nineteen cows yielded 3189 pounds of butter, in one hundred and eighty days, or about 168 pound to a cow. In the same time, our fifty-six cows yielded 9174 pounds of butter, or 164 pounds to a cow. This comes so nearly up to the products of New York State, that we are satisfied, our farmers, by proper attention to selecting their cows for the dairy, can, if they will, do as well as the best. Let them apply their true Yankee tact in this matter, and they may challenge the world.

There is so much time misspent, and labor lost, in the making of poor butter, that we feel it to be an imperative duty to endeavor to impress the minds of farmers, and of their wives and daughters, with the importance of giving heed to this subject. There are some things in relation to it so well settled, as to be universally known by all those who have any knowledge in the matter. There are others on which there remain great differences of opinion, and variance of practice. As for instance, in the statements before us, we find some of the makers of butter apply *cold water* freely to the butter, both before it is taken from the churn, and afterwards, "to aid in extracting the butter milk, and to harden the butter," as they say. Others bring it into form without the use of water, and say that its use impairs the flavor, and essentially injures the quality of the butter. How shall it be determined which of these is right? This is a practical question, applicable to every churning; quite too important, therefore, to be left in doubt. Probably, most persons do as their mothers used to do, without inquiry whether there is any better mode of proceeding. In an intelligent article upon this subject, from one of the most successful makers of butter, in this county, (see Transactions for 1840, p. 72,) we find this sentence:—"More depends on this than any part of the process in making good butter. If our dairy women would apply double the labor to half the quantity of butter, and thereby thoroughly remove all particles of buttermilk, this one half would be worth more than the whole, in the condition it is usually sent to the market." *

The churning process is an essential part of the making of butter. At our request, Mr. Felton, who has for several years obtained the first premium on butter, has annexed to his statement an account of his mode of churning. We looked in vain

* I am informed by a lady, who was instructed by her mother, who for a period the memory of man runneth not to the contrary, had the reputation of making the very best of butter, that she never applied cold water, or any other water, to the butter, after it was churned. She considered such application injurious;—especially if the butter was intended to be put down, as she said,—that is, to be preserved for future use. That it would not keep so well when soaked in water; was not so fine flavored; and more likely to become rancid. [Perhaps my respect for this lady, (who is my mother,) influences my opinions.] In a matter of this kind, I should place more confidence in the practical experience of a sensible woman, than in all the chemical analyses of all the Davys and Liebig's combined.

through the several statements, for information on this point. If it be true, as it is said to be, that some kinds of churns will bring the butter in one half the time, with less than half the labor that others require, this is a fact of great importance in determining the best mode of making butter.

We have heard of many improved churns, but have seen none, the structure and principles of which, better correspond with our ideas of utility, than Crowell's Patent Thermometer Churn. We cannot so well express the idea we wish to convey, as in the letter annexed.*

Mr. Howard, of the Albany Cultivator, authority second to none other in the country, says :—" According to our experience, the best butter is not produced by a very *short* nor a very *long* period in churning. If it is churned too quick, the separation is not complete, and the butter, besides being less rich, is deficient in quantity ; if the process is continued too long, the butter is likely to be *oily*. We think our best butter makers

* DEAR SIR.—I have used the " Thermometer Churn " this season, and have been much pleased with it. It possesses a decided advantage in the spring and autumn, when the cream is generally so cold as to be a long time in forming butter in other churns, as by filling the space between the zinc and the outer side of the churn with hot water, the cream may be easily brought to the proper temperature for churning. In warm weather, however, I do not think much is to be gained by filling this space with cold water, as the cream should be sufficiently cooled before it is put into the churn ; and if it is not, it could hardly be done by cold water, in the short time generally occupied in churning. Still, in warm weather, I have found that the Thermometer Churn will bring the butter in much less time than any other I have ever used ; and this, I think, may be owing to the form of the slats of the dasher. These have a wide and flat surface, obviously producing more agitation of the cream than the round slats of Galt's churn, and of Kendall's churn. On one occasion, I have churned thirty quarts of cream into butter in eleven minutes in the Thermometer Churn, though it ordinarily takes a longer time, an average at least of half an hour ; and a shorter time than this I do not think desirable.

It is claimed for some of the lately invented churns, the Atmospheric Churn, for example, that they will produce butter in four or five minutes ; but I think it is very questionable whether in so short a time all the butter can be extracted from a given quantity of cream, or the butter can be of the best quality. What to me seems the greatest desideratum in churns, is, some improvement in the application of the moving power, by which the amount, or rather the severity of labor may be lessened in churning. As it is now, it is work, and often hard work, too, for an able-bodied man. But if a churn could be made to work so easily that a boy could operate it without fatigue, for three or four successive churnings, it is evident that a great gain would be made in the expenditure of labor. " Blessings on the man who invented sleep ! " exclaimed the renowned Sancho Panza—and equal blessings have I often been inclined to invoke for the individual who would make churning easy.

Very respectfully, yours,

ALLEN W. DODGE.

HAMILTON, Oct. 23, 1849.

would decide, that churning for ordinary quantities, say from ten to twenty pounds, should occupy from *thirty* to *fifty* minutes." This corresponds entirely with the opinion expressed by Mrs. Nathaniel Felton, who said "she did not want the butter to come in less than thirty minutes; it is not so good when it comes in a shorter time."

We are informed by some of those who have been most successful in the management of their dairies, that they look more to the *quality* of the milk given by the cow, than the *quantity*; and in selecting their cows to be kept for this purpose, they choose only those which give milk adapted to the purpose. It is unquestionably true, that one quart of milk from some cows, will yield as much, or more butter, than two quarts from others. In selecting cows, therefore, the quality of their milk should be tested, either by making butter from it, or by the use of a *lactometer*, which shows the comparative thickness of cream that will rise on similar quantities of milk. Mr. Holbert, an experienced farmer, of New York State, says:—"I find by churning the milk separate, that *one of my best cows* will make as much butter as *three* of my poorest cows, giving the same quantity of milk." We have heard the same thing, substantially, from dairy women themselves. Let those cows which abound in *quantity only*, be turned over to those who care only for filling their measures; and let those that afford *substance* as well as *show*, be kept to supply the churn.

But one parcel of cheese was presented to the committee. This was such as to leave no hesitation as to the propriety of awarding the premium offered. A similar state of facts occurred the last year. Why it is that the farmers of Essex are so indifferent as to be unwilling to present their claims, for this branch of the products of the dairy, we are unable to imagine. It cannot be that they have discontinued the making of cheese, for this will never happen while people have an inclination to use it. That it is still used, every well-furnished table bears testimony. That those farmers who live in the immediate vicinity of a ready market for milk or butter, can turn it to better account than to make it into cheese, we have no doubt; but when two pounds of good cheese will readily command as much

money as one pound of well-preserved butter, we think there are many farms on the sea shore, and on the banks of the Merri-mack, where their milk will be most advantageously used for the making of cheese. We remember to have seen splendid collections of cheese, made in West Newbury and Andover; and if such are now there, we can only regret that they are not brought forward. Farmers should remember that they owe something to the public as well as to themselves; and that they have not done their whole duty when they have simply pocketed the money offered as premiums. The design of these exhibitions is to present a fair specimen of the products of the county; and every one who has a spark of patriotism in his breast, should be willing to lend a helping hand. I wish those *good women* who labor and tug day after day, in turning and rubbing their cheeses, would occasionally jog the elbows of their husbands, and urge them to go ahead in the way of their duty. Every man who loves his wife as he ought to do, will be proud to exhibit the products of her industry. If they will not, let the women themselves, do as others we could name have creditably done, exhibit their own cheeses with their own hands. What more interesting part of the exhibition could there be, than to have the products of a dozen dairies, under the superintendence of the ladies themselves, ready to explain how they are made?

On looking over the statements, we were struck with the fact, that but *two* of the cows were of foreign breeds, (so called,) viz., McNaughton's, of Byfield, whose produce was the seventh in quantity. These two were Durhams; there were no Ayrshires, no Devons—unless our natives may claim affinity thereto. Why it is that the farmers of Essex are so slow in introducing these classes of animals, we are unable to determine. Specimens of them have been among us, on the farms of Parsons, Derby, Poore, and others, for years, and many efforts have been made to make known their superiority; but still the real *hard hands* do not take hold of them. On whose judgment, then, shall we rely, the *gentlemen farmers*, or the *operative farmers*? The *theory* of the one recommends the Durhams and the Ayrshires for the dairy, as being the greatest producers; the

practice of the other, adopts the natives. We leave this to be decided by those of more experience than ourselves. We are willing to prove all, and hold on upon the best.

The Buffalo, or hornless cows, spoken of in his statement by Mr. Stone, are there considered as natives. This is not strictly correct; I hope to be able to give a more distinct account of this class of animals, on a subsequent page.

We recommend the premiums to be awarded as follows:—

FOR JUNE BUTTER.

To Nathaniel Felton, of Danvers, first premium,	-	\$10 00
John Preston, of Danvers, second premium,	-	8 00
Elijah Pope, of Danvers, third premium,	- -	6 00

FOR SEPTEMBER BUTTER.

To Charles P. Preston, of Danvers, first premium,	-	\$10 00
Jonathan Berry, of Middleton, second premium,	-	8 00
Nathaniel Felton, of Danvers, third premium,	-	6 00

FOR CHEESE.

To David Choate, of Essex, first premium,	- -	\$8 00
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J. W. PROCTOR, *Chairman.*

Nathaniel Felton's Statement.

I present for your examination, twenty-six pounds of butter, made in June, and twenty-seven pounds of butter, made in September, as samples of eight hundred and eighty-four pounds, made from the milk of eight cows and a heifer, in four months from the 24th of May. One of the cows has been in milk thirteen months. We have used milk in the family for ten persons, and regularly sold two gallons on each Saturday. The cows had common pasture feed, until the middle of August, then for a fortnight, I gave them shorts, and continued to feed them with corn fodder while their feed was short in the pasture. I consider good pasture feed, with good spring water, the very best supply for the making of good butter. When this fails, I supply the vacancy with other things, that can be obtained with least inconvenience.

Process of Making.—The milk is strained into tin pans, and placed in a cool cellar, where it stands from thirty-six to forty-eight hours, when the cream is taken off, put into pails, and stirred daily. We churn once a week. During the warmest weather, the cream is hung in the well, about twelve hours before churning. After the butter comes, the first thing to be done, is to work out the buttermilk. This is done by hand, without the application of any water—believing such application to be no benefit, and in some respects, injurious. About one ounce of best salt is usually applied to a pound, varying in some measure, according to the condition of the butter, to be determined by the taste of the person working it. After standing about one hour, it is worked over a second time, and then weighed, each pound separately. The June butter was preserved by the application of a strong brine, made of common fine salt. I consider that I have used, about the milk of eight cows through the season, for the making of butter, and that their average yield has been about *one pound of butter a day to each cow*.* I find a great difference in the milk of different cows, in the making of butter; and in selecting cows for this purpose, make a point of ascertaining their butter-making qualities, by actual experiment with their milk,

DANVERS, September 26th, 1849.

* *Weekly Account of Butter Made.*

May 24th, 40 pounds.	August 2d, 40 pounds.
" 31st, 50 "	" 9th, 40 "
June 7th, 50 "	" 16th, 42 "
" 14th, 67 "	" 25th, 41 "
" 21st, 55 "	" 30th, 43 "
" 28th, 56 "	Sept. 6th, 42 "
July 5th, 58 "	" 18th, 41 "
" 12th, 52 "	" 20th, 42 "
" 19th, 45 "	" 24th, 35 "
" 26th, 45 "	Amounting to 884 pounds.

Kind of Churn Used.—I use the same churn I have used for twenty-five years, or more. It is made in the form of a barrel, holding about twenty-four gallons, has a crank at the end, attached to a frame-work within, that revolves and agitates the cream. In this, there may be made forty pounds of butter at a churning. It usually takes from thirty minutes to an hour, to bring the butter. I have tried several of the new patterns of churns. Have found none that works so well as our old one. It has no PATENT NAME, but it has so long been accustomed to make good butter, that it has never yet failed to do so. There may be better forms of churns, but I am content to let well enough alone,—having long since ascertained, that every alteration proposed by interested speculators, is not an improvement.

John Preston's Statement.

I offer for your inspection, one jar of June butter, containing twenty-six and one-half pounds, it being a sample of one hundred and seventy-one pounds, made between the 20th day of May and the 9th day of July, and of three hundred and sixty-five pounds and three-quarters, made between the 20th day of May and the 24th day of September.

I have milked four cows, all of native breed. One, nine years old, two, four years old, and one, three years old. I have used in the family, about four quarts of milk per day.

Their keeping has been common pasture, with corn fodder once a day, since the middle of August.

Process of Making.—The milk is strained into tin pans, and set on the bottom of a cool cellar, where it remains from twenty-four to thirty-six hours. The cream is put in stone pots. We churn once a week. The buttermilk is thoroughly worked out, and the butter is salted with one ounce of rock salt to the pound.

NORTH DANVERS, *Sept. 27th*, 1849.

Elijah Pope's Statement.

I offer for your inspection, a jar of June butter, containing twenty-five pounds, being a specimen of one hundred and twenty-seven pounds, made from the milk of four cows, from the 1st of June to the 5th of July.

Also, three boxes of September butter, containing twenty-two pounds, being a sample of four hundred and forty-five pounds, made between the 24th of May and 24th of September, from the same cows, with the addition of the milk of a two year old heifer, since the 23d of June.

Their feed has been common pasture, until the 20th of August, since that time, green corn fodder once a day.

Process of Making.—The milk is strained into tin pans, it stands in a cool cellar, from thirty-six to forty-eight hours,

when the cream is taken off, put into tin pails, and stirred every day.

We churn once a week. During the warmest weather, the cream is placed in the well, from twelve to twenty-four hours before churning. After it is churned the butter-milk is thoroughly worked out, and the butter is salted with three-quarters of an ounce of ground rock salt to the pound. After standing six hours, it is again worked and weighed, each pound separately.

DANVERS, *Sept. 26th*, 1849.

Charles P. Preston's Statement.

I offer for your examination, one pot of June butter, containing twenty-seven pounds, being a specimen of two hundred and eighty-eight pounds, made between the 1st of June and the 9th of July, from the milk of five cows and four heifers, three years old, all of native breed.

Also, two boxes of September butter, containing twenty-eight pounds, a sample of seven hundred and eighty-six pounds, made between the 20th of May and 24th of September, from the milk of the same cows.

The cows have had common pasture feed, until the 1st of August, when we commenced feeding with corn fodder, once a day.

Process of Making.—The milk is strained into tin pans, and placed in the cellar, where it stands from twenty-four to thirty-six hours; it is then skimmed and the cream put in stone jars, and set in a vault made for the purpose. Churn twice a week. We are very particular to work every particle of the butter-milk out, and salt with one ounce of rock salt to the pound.

NORTH DANVERS, *Sept. 25th*, 1849.

Jonathan Berry's Statement.

I present for your examination, twenty-six pounds of butter, made in June, and twenty-eight pounds of butter, made in

September, as samples of seven hundred and ninety pounds, made from the milk of six cows and three heifers, in four months next following the 20th of May.

My cows averaged one pound a day each, through the month of June, and about seven-eighths of a pound each, through the season. Previous to the middle of August, they had common pasture feed only. After that they were supplied with green corn, and permitted to go on our mowing ground.

Our milk is strained into tin pans, and permitted to stand from forty-eight to seventy-two hours, until the cream is fully risen; then it is put into pails, covered, and set in a cool vault prepared for the purpose. We usually churn once a week. The butter-milk is worked out by hand; and about one ounce of salt is applied to a pound. Our cows are of native breed, and gathered without particular care in their selection.

MIDDLETON, *Sept. 26th*, 1849.

John Stone, Jr.'s Statement.

I present for your examination, twenty-six pounds of butter, being a sample of two hundred and twenty pounds, made from the milk of four cows, in thirty-nine days, from the 1st of June to the 9th of July. During this time, we sold eight quarts of cream, and used one quart of milk a day in the family. We have ascertained that nine quarts of our milk yields one pound of butter, and that one quart of cream will make a pound of butter; consequently, the produce of the four cows, in thirty-nine days, was equal to two hundred and thirty-two pounds, or one and a half pounds a day to each cow. Finding that our milk could be used to better advantage, than in the making of butter, after the 20th of July, we discontinued making; and therefore, I cannot give an account of butter made in September. From the quantity of milk given by the cows in September, I am of the opinion, that eight pounds of butter a week to each cow, could then have been made. Our cows had pasture feed only. Our pasture contains between four and five

acres, gravelly bottom, has been ploughed and well cultivated. I have taken pains to select cows of good quality for butter-making. Three of my cows I obtained from Daniel Buxton, Jr., of Danvers. The mother of this stock was remarkable for her milking properties. They are of the breed called Buffalo, without horns, and above the middling size. Two of them have not done so well this season as formerly; and I attribute it to their having been confined too closely during the winter. The old cow became farrow, and was killed at the age of thirteen years, weighing dressed, six hundred pounds. I have several young animals of this stock. I am thus particular in stating these facts, because I consider them of the first importance, in an attempt to establish a good dairy—a point at which I have been aiming for years.

Process of Making.—The milk is strained into tin pans, and set in a cool cellar; when the cream is sufficiently risen, it is taken off, and placed in stone pots. We churned twice a week this season. The butter-milk is worked out by hand, without the application of any water, and salted with an ounce of ground rock salt to a pound.

MARBLEHEAD, Sept. 26th, 1849.

Daniel Putnam's Statement.

A firkin containing twenty-seven pounds of June butter, a specimen of ninety-four pounds, made from the milk of six cows, in two weeks, averaging 7 5-6 pounds per week for each cow, is forwarded for your taste and judgment.

For some days, the milk was carefully measured at the time of straining, and it was found to require ten quarts of milk to make one pound of butter.

The process of making, you have known in previous years, and I will merely say, that tin pans are used—cream is kept in large tin pails; churned twice a week; the butter is much rinsed in cold water, and one ounce of salt is allowed to each pound of butter; the cellar is airy and cool.

The chief requisitions in butter-making are known to be, the

free and faithful use of soap and hot water, in the cleansing of the vessels used, and the separation of the butter-milk from the butter after churning, with the hands; how far we may have been successful in the sample before you, remains, (in part at least,) for your decision.

The feed of the cows at the time the butter was made, was nothing more than common pasture.

DANVERS, *Sept. 26th*, 1849.

Duncan McNaughton's Statement.

The sample of butter presented, is twenty-five pounds, made in June, 1849. Milked five cows; made one hundred and twenty-one pounds in all. The cows were three natives and two Durhams, kept in a very ordinary pasture.

Method of Making.—The milk is strained into tin pails, and kept in a dairy cellar made for the purpose. The milk stands three days before it is skimmed, and the cream stands three days, (stirring it every day,) in a stone jar, before it is churned. Churn every third day. The butter is taken from the butter-milk, and worked through three waters, taken cool from the spring, until the buttermilk is entirely removed, then it is well salted and remains one day, when it is worked over again, working out all the extra salt, and made into pound lumps. The churn is soaked and cooled with cold water from the spring before the cream is put into it.

Lot No. 2.—The sample is twenty-five pounds, made the present month. Milked six cows, and made seventy-nine pounds from the 1st to the 22d of this month. The cows were three native, and three Durham, kept principally in the same ordinary pasture, with a feed of corn fodder every evening. The care of the milk, and the method of making the butter, is the same as No. 1, except, that now the milk stands four days before it is skimmed, and the cream stands four days in the jar before it is churned. Churn every fourth day.

BYFIELD, *Sept. 26th*, 1849.

Nathan D. Hawkes's Statement.

I offer for your inspection, a box of September butter, containing nine pounds, being a sample of three hundred and forty pounds, made between the 25th of May and the 25th of September. I milked four cows. Their feed was common pasture until the middle of August. After that, they had corn fodder once a day.

Process of Making.—The milk is strained into tin pans. It stands from thirty-six to forty-eight hours, according to the weather. The cream is then taken off and put in earthen jars, and kept until ready for churning, which is once a week. After the butter has come, it is salted with an ounce of salt to a pound, and worked over twice, when it is ready for use. The milk is kept in an airy room above ground.

LYNNFIELD, *Sept. 27th, 1849.*

David Choate's Statement.

I offer for your inspection, sixty-six and one-half pounds of new milk cheese, being a sample of eight hundred pounds, made between the 1st day of June and the 1st of August last. We had seven cows in milk, during that time. After the 10th of August, we milked nine.

The whole produce of the dairy has been as follows, viz. :—eight hundred pounds new milk cheese, as above, and forty-four pounds of four meal do., with a small quantity of an inferior kind. Also, two hundred and nineteen pounds of butter. The butter has been chiefly made since the 1st of August.

The farm is situated upon Hog Island, so called, in this town, and has suffered from drought and from grasshoppers, beyond any former year. The cows had no feed besides what they found in the pasture, until about the 10th of September, after which time they were occasionally let into the mowing grounds, a few hours in the day. All the cows are of native breed, except one of the two which we began to milk about the 10th of

August. This cow has had a quart of meal a day only, for ten or twelve days past.

The whole number of new milk cheeses made, is fifty-five. In making the first twenty-three, the night's milk was made blood-warm, after taking off the cream in the morning; after which, the milk of both night and morning, with the cream of the night's milk, was put together, and the rennet put in as usual, at the rate of half a pint to eight pails of milk. The other thirty-two cheeses were managed somewhat differently. A curd was made of the night's milk immediately after drawing it. This was left to drain through the night, and was mixed with the curd of the next morning. The quantity of the rennet was the same as before, and the salt in both cases, was a tea-cup full of the ground rock salt, to a cheese of about fifteen pounds weight. We press from twenty-four to thirty hours. Milk has been used freely in the family through the summer, say, about five quarts a day.

Essex, Sept. 26th, 1849.

A Neighbor's Statement.

The following letter, from a son of Essex, whose dairy products the present season, have commanded the first premium in a neighboring county, will commend itself to favor; although the diffidence of the author will not suffer his name to be used.

MY DEAR SIR,—I have twelve cows, mostly of the common native stock. There are among them, however, *twins*, said by the late Elias Phinney, Esq., to be of the Swinley Ayrshire breed, and one of the North Devon breed. Three are old cows, two are heifers, one of which is just three years old, and has raised one calf last year, and one this; the other is two years old, and made the second week in September, five and a half pounds of butter. These heifers were raised upon my own farm. The first was taken from the cow when five weeks old, and fed immediately upon hay and water, without ever being learned to drink milk, or in any way changing her food, except by the addition of roots occasionally, until the next summer,

when she was sent to pasture. Her first calf was dropped when she was twenty-two months old. The other heifer was taken from the cow when five weeks old, and sent immediately to pasture. The calves of both are now in pasture, and promise well under similar treatment.

From the 20th of May to the 10th of August, six cows were pastured at home and milked. One of these calved early in December, and one in January last. Since that time, three more have been added to the number kept at home, and three remain dry, at pasture, away from home. They all have good pasture and an ample supply of running water.

In June, from the milk of six cows, we made 198 pounds of butter. In July the severe drought had nearly destroyed the feed, and the quantity of butter was diminished. During the autumn, the feed has been very good, and we have had the milk of nine cows, and from the whole, we have made since the 23d of May, 1019 lbs. butter. The number of persons in my family has never been less than fourteen, and for many weeks during the summer, it has been eighteen, and we have used milk and cream at all times freely.

Our milk is strained into tin pans, and allowed to stand from thirty-six to forty-eight hours, in a cool, darkened room on the first floor of the house; except in August, when it is kept in a cellar, under a wing of the house. The cream is taken off into tin pails; is salted a little, and stirred every day. We churn twice each week during the summer. Before churning, the cream stands upon ice for twelve hours or more. After churning, the butter-milk is thoroughly worked out by the hand, and the butter is salted to suit the taste. The day following, the butter is worked over again and prepared for the market. In laying down butter for the winter, we use stone jars. After packing it down very closely, we sprinkle salt and loaf sugar, between each layer of butter. In this way our butter has kept perfectly sweet through the season.

It should be mentioned, that during parts of July and August, the cows that were milked, had, in addition to the pasture, green corn fodder; or in the place of that, Indian meal and shorts, equally mixed, in proportion of two quarts to each

cow daily. And the same quantity of the same grain has been given to them during the last half of September, and of October.

The management of the dairy has, in consequence of the sickness of my wife, been wholly confided to my daughter the present year. Previously, she had had no particular training for this branch of housewifery. She engaged in it with alacrity, and her own health has been benefitted by the occupation.

You will, I trust, pardon the suggestion, that it should be made a special object of our agricultural societies, to interest and awaken the attention of the female part of the community—perhaps by associating ladies in the examination of such articles as they are best competent to judge of; and by making the exhibition of such articles a distinct department of the annual fair. Or, perhaps, by offering a premium for the rearing of fowls,—the cultivation of flowers, vegetables, or fruit trees,—or the keeping of bees, and such like. The dairy, needlework, knitting, &c., belong of course to them. But I would bring them into more active employment, in the open air. One of the best conducted dairy establishments in this town, where five or six cows are kept, is *wholly* taken care of by two females, a widow and her daughter. Mothers have much to do with the training of their sons to a love of, and an intelligent preparation for, a farmer's life. It is from their interest in, and their skilful management of the labors which belong chiefly to them, upon a farm, that their sons learn to love, and to practice with success, the business of farming.

October 30, 1849.

The following letter, from the best authority as to the introduction of foreign animals into New England, will be read with interest, and fully explains the remark made at the close of the Report on the dairy.

TEN HILLS FARM, NEAR BOSTON, MASS., }
December 10, 1849. }

MY DEAR SIR:—In reply to yours of the 23d ult. and of the 5th inst.; the first and only importation, within my knowledge,

of Galloway Polled, or hornless breed of cattle into New England, was about the years 1797 to 1800. A gentleman by the name of Joseph Russell, then residing in Boston, imported, I think, six cows and a bull, and placed them on what was then called Hog Island, now called Belle Isle, situated in the town of Chelsea, and there bred them pure for fifteen or twenty years. I visited this island frequently, and watched the progress of these cattle. I found them hardy, taking on flesh readily, and silky in the handling or touch, and as milkers, they were fair, much above the average of our native stock. The calves from this imported stock were generally raised for breeders, sold, &c. At one time, a large portion of the neat cattle in Chelsea were of this Polled breed; but the people of Chelsea gave little or no attention to preserve the breed pure. I soon saw their mixed bloods,—their oxen were ill-looking animals, with little loose horns attached to the skin only, hanging and dandling about their faces; their pure blood cows were allowed to go with any little runt of a bull. The late Benjamin Shurtleff, M. D., soon after purchasing a farm in Chelsea, say some twenty to thirty years since, obtained several of these cows, and he always, in speaking to me, thought highly of their milking properties. This breed of cattle have been spread abroad in Massachusetts, New Hampshire, Maine, Vermont, &c., but I think it doubtful if the pure breed, male and female, can now be found in this neighborhood. I mean, possessing all the original characteristics.

It has been said that the Galloway Polled has never been improved by cross breeding with any other variety of stock.

There are, it is said, two varieties of the hornless breed of cattle. The Scottish Galloway Polled, and the Suffolk Dun Polled,—the last mostly originating from the former. The Galloways giving the richest, and the Suffolk Duns yielding the most milk. I am inclined to think that the Russell importation were of the Suffolk Dun variety.

Respectfully and very truly yours,

SAMUEL JAKUES.

To J. W. PROCTOR, Esq.

PLOUGHING.

The Committee on ploughing with single ox teams, report that seven entries were made, but only five of the teams appeared on the field. The land appropriated for the purpose was a tough grass sward, in a rich soil, free of stones or other obstructions. It was laid out in lots, thirty feet wide and three hundred feet long, with side furrows cut. The ploughing was required to be done at least six inches deep, and without a driver. All the teams but one did their work as required. One team ploughed handsome, but not so deep as required. The Committee did not feel at liberty to look at this work, as coming into the competition, as it was not done in conformity with the conditions on which the premiums were offered. Whatever may be the opinion of competitors of the propriety of these conditions, if they enter, understanding them, they are bound to regard them for the time being. The work was done by the several teams, in time varying from thirty-six to forty-one minutes; and with an average of twenty-two furrows, being a width of fourteen inches for the furrow slice.

To Hobart Clark, of Andover, first premium,	-	\$8 00
Benj. P. Ware, of Marblehead, second premium,	-	6 00
Elijah Pope, of Danvers, third premium,	-	4 00
Henry Poor, of Andover, fourth premium,	-	2 00

The land was similar to that ploughed by the double teams; only the furrows were not cut so deep, by about *two inches*. The work of the double teams was completed in thirty minutes, being three-fourths of the time occupied by the single teams. A fair question arises, which of these kinds of ploughing is most worthy of being used on the farm? The fact that there has been, almost every year, *twice as many double as single teams* on the field, seems to indicate that the proprietors themselves have an inclination for the use of double teams. The committee are not unmindful that it is contended by some, that one pair of cattle is sufficient to do ordinary ploughing; and that *six inches depth* is as good as more. They have heretofore been inclined to this opinion, and have attempted cultivation in this manner. But they are satisfied from their

own observation, that it is best to employ at least two pair of cattle in turning grass land, and in the first ploughing of ground that has been cultivated ; and that the furrows should be cut from *eight to twelve inches* deep, where the soil will admit of it.

The advantages accruing from deep ploughing will more than counterbalance the additional expense. One of these is, where the land is *sidling*, it will not wash near as much. The earth having been stirred deep, the rain will settle down, and not run off, as in shallow ploughing. Deep ploughing increases the quantity of soil to be used by the growing crop, especially if the land is properly manured,—and there is no use in attempting cultivation without liberal manuring. The maxim, “Once well done, better than twice poorly,”—applies with peculiar force to the cultivation of our fields.

The committee have ventured these suggestions, because they have witnessed a different opinion gaining ground, in some of our most intelligent agricultural districts ; and because on their own farms, they have found the practice of ploughing with single teams not worthy of being continued. They therefore hope the time will be far distant, when our agricultural societies shall discontinue the practice of offering premiums to encourage the use of double teams.

WM. SUTTON, *Chairman*.

BARTLETT'S DOUBLE PLOUGH.

The attention of the committee [on ploughing with double teams] was called to the operation of “*Bartlett's Patent Double Plough*.” The work was witnessed with much interest. As it was to the committee an entire new thing, they wanted further opportunity to examine it. Accordingly, the chairman, president, and some of the trustees, with other gentlemen, spent several hours the next day in witnessing the operation of these ploughs. The result of this trial, as communicated by one of the gentlemen present, is adopted, as expressive of the opinion of the committee, so far as the chairman is permitted to speak, in their behalf. It is as follows :

DEAR SIR,—Cheerfully do I state my impressions on witnessing the operations of “Bartlett’s Double Plough,” premising that I make no pretension to skill in the use of the plough, other than what I have learned by observation, and a deep interest in the subject.

There were three sizes of the plough presented, each of which was used for the purposes designed. The grass land was on the same field where the other ploughing was done,—a deep rich soil, that had borne a large burden of grass, and was closely matted with the roots of the grass. The land was level and entirely free of stones, rather dry, except the moisture of the slight rain of the evening previous. The largest size were drawn by three yoke of cattle, and gauged to cut furrows, each nine inches deep and sixteen inches wide. This work was perfectly well done, and the furrow slice laid as accurately as with a single plough. The team had to labor in a manner that could not long be continued. It was an experiment in ploughing not adapted to common use. There can be no objection to the furrow being cut of this depth, but two furrows, nine or ten inches wide, would be much better than one fourteen or sixteen inches wide. I do not approve of the practice of cutting wide furrows and laying them entirely flat. The English practice of cutting narrow furrows, just so wide as they can be fairly turned, has many reasons in its favor. *If the double plough can be used to turn the furrows in this way, and double the number of furrows can be made in the same ground in the same time, even though no more land will be broken, much will be gained by its use.*

The middle size ploughs were moved by two yoke of cattle, They were gauged to cut the furrows thirteen inches wide and seven inches deep. This work was done without any extra effort, in a manner that could be continued. I could not see that the work was not done equally well as that by the team along side, attached to single ploughs. Without doubt, more power was required to do the work, but how much more I had no means of determining. I feel confident, *not twice as much*. The labor of one man, at least, was saved in the operation. With this work we were entirely satisfied.

This, and the size smaller were operated in old ground also, and the work was perfectly well done. In the ploughing of this kind of land, where the whole power of the team is not required, I know of no reason why nearly double the work cannot be done in about the same time. The ploughing done by these ploughs surpassed our expectations. The furrows were cut with greater uniformity, one of them necessarily being true without deviation,—one plough in a measure guiding and controlling the movements of the other. They were guided as easily as a single plough ;—in fact, they would move for rods together without any guidance. How these “Siamese ploughs” will operate in rough and stony land, I had no opportunity to witness, and therefore express no opinion. So far as I have seen their operation I am pleased with it. The only difficulty noticed in the operation of these ploughs, was at the end of the furrows,—*the taking out and setting in again*. This appeared to require an extra effort on the part of the ploughman,—the skill of an efficient and experienced hand. It appeared to be something that *a boy, or a weak man*, could not readily do. If this be so it must be obviated, or it will constitute a serious objection to their ordinary use. It is not enough that they can be advantageously exhibited at a “cattle show;” they should also operate freely when no one is looking on.

One gentleman remarked:—“If these ploughs shall be found useful in practice here, they will probably be of much greater value in the extensive fields of the southern and western states, as any number of ploughs can be connected on the same principle. Perhaps the application of steam power to move them in large plain fields, may hereafter be found practicable and useful.”

The invention is an ingenious one and worthy of approbation. I have heard of double ploughs, but never before saw their movement. It is the best combination for the purpose I have known. I think them worthy of thorough trial, and hope some of our enterprising farmers will, before our next exhibition, give them such a trial.

JAMES STEVENS, *Chairman.*

ON FARMS.

The trustees of the society have often expressed the opinion that the examination of a number of the best managed farms in different parts of the county, by their committees appointed from year to year, for that purpose, having a full and minute account of the entire cultivation and management to accompany their report, would furnish to the members of the society, through their annual pamphlet, a very valuable source of information.

To accomplish this desirable object, liberal sums have been offered in premiums, and the regulations accompanying the offers varied, from time to time, to meet the wants and induce a larger number of competitors into the field. Notwithstanding which, few entries have ever been made, and many of the years not a solitary one, on which the committee could form a practical report. The present year, a new and apparently a more liberal mode accompanied the offer.

The sum of one hundred dollars was placed at the disposal of the committee, to be awarded in sums not exceeding twenty-five dollars each, provided a sufficient number of meritorious claims should be made. And while the committee would express their high gratification in the opportunity furnished them of examining, in the northern part of the county, a number of well managed farms, it must be accompanied with their regret, that they were not favored with the privilege of examining other farms in different parts of the county, enabling them to compare the different modes of cultivation, and variety of crops cultivated, with the different success. The committee were directed to visit such farms as were entered for premium, and all others, where the owners should signify a wish to receive a call from the committee, and a readiness to furnish a statement of their management.

Notwithstanding in the County of Essex, much of the enterprise is called to other pursuits than agriculture, there is a good market and a fertile soil, and much of it highly cultivated in all parts of the county. And at the present time, in the opinion of the committee, the owners and cultivators of the soil here, have

full encouragement to redouble their efforts in availing themselves of all the means of information within their reach, and prosecuting, with renewed energy, their honorable occupation.

It must be obvious to all, that a great physical change has been produced, through the agency of steam, as a motive power, within the last half century. And the more recent discovery of railroads, for the transportation of passengers, merchandise, produce, and live stock, which have already checkered our whole country, furnishing cheap and easy transportation to the cultivators of the soil, many hundred miles in the interior, where the price of land, and the expense of cultivation are comparatively small, may have, to some extent, for the few years past, injuriously affected the cultivators of the soil near our old markets, where the price of land is high, and expense of cultivation large. But it does not require prophetic vision to perceive that the cultivators of the soil here have passed this crisis, and are fast recovering their equilibrium, and will soon find themselves erect again, with their friends and neighbors in other pursuits. The partial failure of the potato crop, for several years, and the fruit crop for the two past years, has affected the income of the farmers, in this county, to some extent. The other products of the farm have been abundant, and our domestic market has been rapidly increasing here, and extending into the interior. While the cultivators in the more fertile regions of the west, where crops are less uncertain, and expenses small, are finding a foreign demand for much of their produce, prices of the products of the farm here are recovering to such an extent as to reward the laborer for his toil, and give him a small dividend on his capital. Nothing seems wanting to the cultivators of the soil of this county, to ensure success, but knowledge, patience, perseverance, and economy, and the blessing of our Heavenly Father, who has graciously been pleased to vouchsafe to us the assurance that seed time and harvest shall not fail.

Jonathan Merrill entered his farm for a premium, but not in season, by the rules of the society, to be entitled to one, should he have been found otherwise deserving. J. F. Ingalls, Daniel Merrill, and Simeon L. Wilson, entered for an examination. All were in Methuen.

The farm of J. F. Ingalls, is situated about two miles from Lawrence. He has had the management of it about six years, and, for that brief space, the committee were fully satisfied that the products had been greatly increased. His buildings were neat and convenient, and his cultivation clean and handsome. His young orchard appeared in a flourishing condition. He has reclaimed a number of acres of meadow, near his buildings, with but small expense, which will reward him liberally. He keeps about twenty cows, the milk of which is sold at Lawrence. His whole management is worthy of imitation, and we award him the sum of \$15 00.

They next visited the farm of Jonathan Merrill, about one mile from Lawrence. He has but a small piece of land connected with his buildings. Some part is covered with fruit trees, and the rest occupied as a kitchen garden. The attention of the committee was particularly invited to his reclaimed meadow, about a mile from his house. He seems to have succeeded in bringing, by judicious draining, land which was but a short time since, comparatively worthless, into a high state of cultivation. The committee saw growing upon it, a luxuriant growth of grass, corn, potatoes, and almost every kind of garden vegetables. They award him the sum of \$10 00.

The farm of Daniel Merrill is about two miles from Lawrence. In the opinion of the committee, his farm is valuable for its situation, and a fine wood lot upon it, rather than for the natural fertility of the soil. There seems to have been much labor performed upon his farm, and with good success.

He has reclaimed some meadow, by ditching and draining, and made the dry knolls fertile by hauling the mud upon them from the ditches. He has given much attention to making, and preserving for use, manure. We award him \$10 00.

Near the farm of Mr. Merrill, is the farm, or rather the nursery, of Simeon L. Wilson. It may be a question whether he should not have entered it with the committee on nurseries. His little cottage, however, surrounded as it is with trees, cannot fail to attract the notice of all lovers of rural taste and beauty, who chance to pass that way. There was much to be admired in the neatness and order of all his arrangements. His travel-

ling establishment was not gorgeous or expensive. He was wheeled on a common wheelbarrow through the walks of his grounds, to show and explain to the committee the manner of reclaiming his land and cultivating his trees. Some of his standard trees had fruit upon them. Instead of a bush, which the quince usually exhibits, his quinces were trained to a handsome tree, having on them some fine specimens of fruit. His method of defending his plums from the ravages of the Curculio, was to the committee, new, and seems to have been successful. But whether it could be practiced on a more extended scale, the committee say not. They are of opinion, that, although for want of means in the commencement, the reclaiming of his land has been attended with much expense, yet, from present appearances, he will receive a rich pecuniary reward, when his trees shall be fit for market.

Mr. Wilson's statement is a history of himself, as well as his cultivation, from his youth. The committee are of opinion, that such persevering industry, and successful management, in cultivating the soil under the many disadvantageous circumstances which have attended Mr. Wilson, being a cripple from his youth, should not pass without a favorable notice, and they award him the sum of \$10 00.

The committee having visited and examined all the farms entered for examination, and being near the farm of Joseph How, of Methuen, who had received a number of premiums from the society, for his good management and successful cultivation, embraced the opportunity afforded, of passing over his farm. Having obtained the first premium of the society, for the best managed farm in the county, has not bounded his enterprise in farming. The chairman of this committee had visited and examined Mr. How's farm seven years since. Such alterations and improvements had been made in it since that time, as to change the whole appearance to such an extent, that he was unable to find it, without inquiry. A new and elegant house had been erected, ornamented with trees and flowers in front, and with a hedge, or live fence, extending for a considerable distance on either side.

His homestead farm consists of one hundred and twenty-

seven acres. Fifty-two acres of mowing, tillage, and orcharding, the remainder, pasture, with the exception of a few acres of wood-land. He has two barns, one thirty by forty feet, used exclusively for storage of hay, and one eighty-four by forty, with a cellar under the whole, both of which he usually fills every year with English hay, of which he sells from forty to sixty tons per year. In his large barn is kept his stock, and in the cellar his swine, working over and mixing the manure. He has experimented, to some extent, with raw and cooked food, for fattening swine, and is of opinion that it may pay the cost for cooking roots, but will not for grain or meal. The produce of his orchard, the present year of great scarcity, was one hundred and twenty barrels of winter fruit, picked from the trees. There is, of field land, a proportion well adapted to the growth of corn and grain, of which, the committee saw fine crops growing. He has given more attention, of late, to the production of hay, which, in his opinion, gives him a better profit with less labor. Much of his field land is well adapted to grass; a proportion of it being reclaimed meadow, which does not admit, or require the plough, as it is kept highly productive by occasional top dressing. Other portions are moist, but admit of ploughing at dry seasons of the year, which he usually does once in about six years, as soon as the crop of hay is off. He then carts on about twenty loads of compost manure to the acre, harrows and rolls smoothly, and sows Timothy and Red Top seed, which never fail of a full crop the next season. He is in favor of sowing grass seed in autumn, rather than in the spring, with grain, on dry land.

His pasture is on a high, smooth swell of land, where the committee had a fine opportunity of witnessing the good effects of gypsum as a fertilizer. Comparing his land where gypsum was applied, with other land adjoining, of apparent like quality, where gypsum had not been used, the difference was truly surprising. Although the season was dry, there was a luxuriant growth of white clover, covering the ground where gypsum had been used. His method of applying is, to sow early in the spring, from one and a half bushels to two bushels, per acre, every year. There were in this pasture about twenty head of

beef cattle, the looks of which satisfied the committee that the feed was as nutritious as handsome. Mr. How composts most of his manure, for which he uses, for highland, three parts meadow mud, to one of manure, with leached ashes, gypsum, and sometimes a little salt. For moist land, subsoil is used instead of mud. He has experimented, to some extent, with guano, crushed bones, and poudrette. He is of opinion that any of these will benefit the first crop, but will show but little or no effect afterwards, while his compost endures for a number of years, with but little apparent failure. In the application of manure, he, like others, finds much difficulty in arriving at certain conclusions, owing in part, to the uncertainty of the seasons, whether wet or dry. For a corn, or potato crop, on dry land, he favors the ploughing in of the manure, as the surest manner of obtaining a full crop. But for grass and grain, which usually arrive at maturity before drought pinches with severity, he prefers to have the manure near the surface. In the application of his compost to grass land, he is of opinion that it should be applied late in the autumn, to avoid the scorching rays of the sun, before it is settled by the rains around the roots of the grass.

His cultivation is remarkably neat and clean. Scarcely a weed, and not a bush, are to be found in his fields or pastures, neither in the open field, or in ambush under the fences, which are mostly of stone wall. The surface stones had also been removed for fences and under drain, of which he has many.

Mr. How has been in possession of his farm for about twenty years. He is the third generation upon the same spot. His land as a whole, is naturally of good quality, and by his skilful management, he has brought it to that state that it will continue to yield full crops with but little labor. In the haying field, we saw two lads at work, which, we were informed, are Mr. How's only children, apparently fifteen and seventeen years of age. From their intelligent look, animated and contented appearance, the committee were of opinion that Mr. How's farm might remain, as it now is, a model farm for the next generation.

DEAN ROBINSON, *Chairman.*

J. F. Ingall's Statement.

My farm contains about one hundred and sixty acres. Most of it was my father's. Six years since, I came in possession of it. I then kept one horse, four oxen, eight cows, and two or three young cattle.

I then cut but little more hay than was consumed by my stock; since, I have added to their number, so that I now keep two horses, four oxen, twenty cows, one bull, and one two-year old heifer. This stock is supplied by the produce of the farm, (except a part of the meal and the shorts, which I purchase.) The cows yielding milk, I feed, in part, with roots, shorts, and meal.

The labor in summer, is performed by myself, three men and a boy,—one added during the haying,—and by two hands in the winter. One goes to market, once or twice a day, with milk and vegetables, through the year.

This year I have planted 3 acres in corn, to ripen,

2 " in corn fodder,

2½ " in potatoes,

2 " in vegetables.

9½

My farm is divided into upland, mowing, and tillage,—about thirty-eight acres; and of reclaimed meadow that has been mowed, twelve acres. Also, three acres seeded down in August and September, the present year. Seventeen acres still remaining uncultivated. The upland I plough deep, and manure with compost, which I make chiefly from the droppings of the cattle, horses, and hogs, including the urine, with peat muck. I have used stable manure and leached ashes, but do not consider stable manure profitable at four dollars per cord, composed, as most of it is, of litter or straw, in too great proportions.

About ninety acres is pasture, sixteen acres of which being covered with wood. I have recently cut it off, and applied gypsum to two-thirds of it, and find it profitable.

My manner of reclaiming swamp, or meadow land, is as follows:—The first lot, containing about seven acres,—mud from

two to eight feet deep, a cold, boggy swamp, partly covered with bushes, and the rest producing a little poor grass. I first cut an outlet across the public road, and then ditched the lot, which was quite expensive ; but the muck was a good compensation. My next process with a part of it, was to cover it with sand, or sandy loam, which cost, for one acre, fourteen days' labor of one man, and one yoke of oxen and cart. Most of this work was done in the spring, before the frost was out of the meadow ; harrowing, at different times, about two days.

Compost manure, about twelve cart loads, of forty bushels each, was next applied, composed of three-fourths sandy loam, and one-fourth manure, from the barn cellar, with leached ashes in an equal proportion. On this I sowed one-half of a bushel of grass seed, in 1844. The remaining six acres did not require so much outlay as this, and therefore the above is more than an average outlay. On some of it, I had a good crop of grass at first, without any other manure than leached ashes, spread on, about one hundred and fifty bushels to an acre, and seeded in the spring of the year, with oats and grass seed. Most of this has given a crop of one and a half, to two and a half tons of grass per acre. I think much benefit is derived from harrowing in the spring, when the frost is leaving such land. I removed some of the turf, but do not think it necessary or profitable. Nearly all the above meadow has yielded two crops each season, for the two years past.

The second lot—a peat meadow, was partly covered with bushes, the other part producing but little grass. Mud, from one to four feet deep. One acre reclaimed in 1847. A part of it I covered with sand, about fifteen bushels to the rod, the other part had no sand applied. It was then harrowed, while the frost was leaving the ground. It was then dressed with one hundred and twenty bushels leached ashes, and sowed with oats and grass seed, and produced a good crop of oat straw. It has since been dressed with compost manure, and I think has yielded two tons of hay, per acre.

On the third lot, which was partly covered with small water bushes, about eighty loads of sand were hauled, in the winter of 1847. Harrowed the next spring, when the frost was com-

ing out. In September, carted on about twelve loads of compost manure, made nearly in the following manner:—Three-fourths sandy loam; one-fourth clear manure, (solid and liquid,) from the barn cellar; then sowed down with about one-half bushel of Herd's grass seed. Its yield was not far from one and a half tons per acre.

The fourth lot.—The mud of this lot was from one to four feet deep, covered with bushes. First, it was burnt over; the remaining bushes were cut, then harrowed in the spring, before the frost was out, which killed most of the bushes. In September following, it was spread over with compost manure, and seeded down with grass seed. Its yield was about 1500 weight per acre. If sand had been applied, as on the other lots, its yield would probably have been greater.

METHUEN, Oct. 30th, 1849.

Jonathan Merrill's Statement.

The farm which I offer for premium, contains forty acres, divided as follows:—Fifteen acres unimproved, ten acres tillage, eleven acres mowing, and one acre orcharding. The ten acres of tillage are divided as follows:—Six acres to potatoes, three acres to corn, and one acre to gardening.

For the last three years, the potato crop has averaged from one hundred and seventy-five to two hundred bushels per acre. The corn crop, during the same time, about sixty-five bushels per acre. The hay crop, also, nearly two tons per acre.

The most important feature of this farm is, eighteen acres of improved meadow land, and to which, the attention of your committee was particularly called. Improvements were first commenced on this land, about eight years since, and have been made from year to year, till the present; and now eighteen acres are in a healthy and vigorous state of cultivation. This land was originally in a very rough state, covered with large hassocks, with a growth of bushes and wild grass. The land was first drained by ditching, the peat taken from the ditches meeting the expense. The hassocks, roots, and bushes, were

then removed, and the ground dug over with the hoe. Most of the upper part of this land, including hassocks, bushes, &c., was burnt, for the benefit of the soil. The expense of this clearing and preparation, has been thirty dollars per acre, on the average. On some parts of this land there has been a slight growth of wood. The use of the land for two years, and the wood, has been given for reclaiming the same, which has been a profitable operation to those engaging in it, and at a much less nominal cost for the improvement, to myself. Much of the land has been improved in this manner.

The potato crops have been raised without gravelling, and usually without any manure, for the first two seasons; subsequent seasons, by applying about one and a half cords, to one of manure, per acre, which I deem amply sufficient. The largest crop of potatoes raised, was three hundred and fifty bushels from one acre,—eleven hills yielding a bushel, on the average.

The corn crops have been raised after gravelling the land. From ten to twelve cords of manure, per acre, have been applied, previous to planting. The cost of gravelling has averaged twenty-five dollars per acre. The largest crop of corn raised, was in the year 1846, when one-half an acre, by measure, yielded one hundred and five bushels of superior corn, on the ear.

The grass crops have been raised on the land after being planted with corn, no dressing being applied for the first two years; subsequently, the grass has been kept up by merely a top dressing each season. This land is now mostly free from wild grass, and I consider it in as good, or better state for the several crops than when first reclaimed. In 1844, 3,850 pounds of superior English hay were taken from one-half an acre, by measure. The crops of hay, from year to year, have averaged, rising two tons per acre, and of the best quality. When the seasons have proved favorable, the first two years after being laid down to grass, about one ton of second crop has been cut on much of the land, per acre. The crops on the reclaimed land have been much larger, and of as good quality as the same crops on other parts of the farm, although much of the land is in a high state of cultivation. I deem it best to remove the

roots from meadow land when first reclaimed, as it facilitates after cultivation. Vegetables have also been raised on this land, with the best success.

Upon other parts of my farm, I have two hundred and sixty young and thrifty apple trees, grafted with choice fruit. Yield, last year, forty barrels. I have, also, one hundred young peach trees, and one hundred plum and cherry trees. I also raise, yearly, a large quantity of beets, parsnips, cabbages, and other vegetables, both for home use and the market.

I deem my reclaimed land the most important and profitable part of my farm; consequently, I have devoted much attention to its cultivation, and for this reason, have given it so much space in this statement.

METHUEN, *October*, 1849.

Daniel Merrill's Statement.

My farm consists of about one hundred and twenty-five acres. Not far from seventy-five acres of it are covered with wood, mostly of a young growth. About twenty-nine acres of the other, are pasturing, and the remaining twenty-one acres are mowing and tillage. There is quite a variety of soil on the farm, from the poor gravelly knoll to that of meadow land. Quite a proportion of the upland has a gravelly subsoil.

At the time I commenced on the farm, (which was about fourteen years ago,) there were probably from six to eight tons of English hay cut on the farm. At the present time, from eighteen to twenty tons. The meadow, which consists of about four acres, I commenced improving in various ways. On certain parts of it, I took the turf off, and then gravelled and seeded down to grass, and so far as I had the means, top dressed it. Other parts were gravelled without topping. In doing which, I put just enough gravel upon it to kill the grass. Other parts were ploughed, and planted to corn, or potatoes, and after being well subdued, were laid down to grass.

You may wish to know which method I consider preferable. I think if the meadow be smooth and pretty free from moss, it

may be as well to cover without topping. But if otherwise, the topping system I think is preferable, especially if it does not take too deep. Ploughing should be resorted to when other crops than grass are desired, or when it is necessary to level without lowering the surface. I usually put on my meadow, a light top dressing each season, generally late in the autumn. As near as I can judge, I cut from two to three tons of hay to the acre, at the first and second time of mowing.

As I sell my milk, my object is to raise such crops as will increase its quantity. Grass and roots, with green corn, are my principal crops with the exception of apples. To the raising of apples I have given considerable attention. Most of my trees that bore natural fruit, have been grafted, however large they were. By grafting, pruning, scraping, and manuring, my orchard has been much increased in value.

I am very much in favor of deep ploughing, and manuring highly, even if by so doing we are obliged to cultivate much less land. The little experience I have had in farming, convinces me that most farmers pay quite too little attention to the *making* of manure.

I had no cellar to my barn until about one year ago; since which time I think my manure heap has been very much increased, especially in value. In making manure, (which has been almost entirely compost,) muck has been used very freely, and I think to great advantage. I have purchased but little manure, with the exception of leached ashes, for some years. Since I have had a cellar under my barn, my fresh manure has been made into compost *daily*, (Sundays excepted,) and so managed that most of it becomes saturated with urine. In laying down my land to grass, it has been done mostly, for a few years, late in the autumn, so that the seed did not vegetate till the next spring. I have had very good success in this way of managing.

METHUEN, Oct. 1849.

Simeon L. Wilson's Statement.

Having been favored with a visit from the committee on farms, and requested by them to make a statement of facts relating to my place, it is with pleasure I comply with their request. I suppose their attention was attracted to it by the peculiar circumstances under which I have labored, in bringing a barren piece of land to its present fertility. I will briefly state the particulars. At the age of thirteen years I became a cripple, by a white swelling on my knee, which caused me to lose the use of that joint. I at first got about upon crutches; afterwards with only a cane, and finally without the aid of either. And whilst I was buoyed up with the hope of again getting well of my lameness, or nearly so, I was afflicted with a paralytic stroke, which caused me to lose the use of the other leg very suddenly. This took place in 1831, when at the age of twenty-two years; since that time I have not been able to walk one step. At first this affliction seemed to dishearten me, and I came near giving up in dismay. But hope predominated, and I made a vigorous effort to obtain a livelihood by my own industry. Not having any trade, I commenced closing shoes. By applying myself very closely to my business, working early and late, I succeeded in obtaining a sufficient sum of money to purchase one acre and sixty rods of land, near Methuen village. With a little assistance, I soon had a house on the same, into which my parents moved in the fall of 1836. This piece of land, although but small, has a variety of soil, viz. : a gravelly hill, yellow loam, black loam, or clay soil, rather moist, and a swamp, very wet, with muck eighteen inches deep on an average, with a clay and sandy bottom. The swamp was covered with a thick growth of alders. The upland appeared to be almost filled, or paved, with small stones. The whole lot was a very bad looking piece of land. In the spring of 1839, the stones were picked off the upland, and it was ploughed for the first time, which threw up as many more small stones as had already been picked off. The alders were cut from the swamp, and a ditch dug through the same to drain it. I then undertook to plough the wet, or swamp land, with six oxen; but

they did little more than merely to tear it up in spots, there being so many roots. It was so bad I concluded not to cultivate it.

At this time I built a shop adjoining my house, from which I could see to any part of my little farm, and give directions about the work without leaving the shop. Having but limited means, and not being able to do much on the land myself, I made but slow progress in improvements. I commenced a ditch six feet from the ploughed or upland, and ran it around the swamp on three sides, six feet wide and eighteen inches deep, and threw the muck upon the space between the ditch and upland, which gave me six feet more in width to my upland around the meadow. This looked well, and I was not content to stop here. According to the Yankee motto, thinking it best to keep moving, the following year I filled the ditch with stones at the bottom, then gravel, then loam, until it was filled even with the surface of the swamp. Then I cut another ditch around the swamp, directly beside the one that I had filled up, and threw the mud on the same, which added six feet more, or twelve feet in all, to the upland on three sides of the swamp. I again filled the ditch as before, and threw the muck from another on top. I pursued this course, until the whole swamp was reclaimed, which raised the surface eighteen inches higher than it was before. I then removed more than half of the muck to the upland, and returned as much loam from the upland in its place. Then by ploughing, the loam and muck were well mixed. I have an open drain leading through the meadow, from the spring by the hill, to a drain by the road; thus the meadow is rendered dry enough for any kind of cultivation.

This method could not be practised as a general rule, with regard to economy in reclaiming wet land. I had good reasons (or thought I had) for reclaiming my own in this way. In the first place, it was but a small piece, near the house, and a convenient place for a garden. I also wished to remove the gravel and loam from the side of the hill to put in a bank wall, and make room for a row of cherry trees. I wished to make it myself, and add to the beauty of the scenery about the gar-

den. Having but limited means, and keeping within those limits, I made but very slow progress, and was three or four years reclaiming my meadow. The stone, gravel, &c., was wheeled on a wheelbarrow from five to fifteen rods. The cost of reclaiming the meadow in this way was about three dollars to the square rod, or \$480 to the acre. But I must charge the upland with half of that amount ; for every load used to raise the meadow was taken out of the way from the upland. It would thus leave the expense of the meadow at the rate of \$240 per acre.

In the year 1841, I received a few fruit trees of choice kinds, from a nursery near Boston, which was the commencement of my setting fruit trees ; and from this date I made it my practice to set a few trees each year, of the best varieties. I would here mention, that wishing to avail myself as much as possible of useful information in regard to farming, gardening, and the management of fruit trees, I became a subscriber to the *Boston Cultivator*, at its commencement, in 1840. Since that time I credit its editors and numerous correspondents with much valuable information. The more I studied into the art of gardening and growing fruit trees, the more lively interest I took in the same—not more for the profit than by the beauty of the scenery, to make home the more sweet. In 1843, I transplanted to a row by themselves, a few small apple trees, that had come up spontaneously about my place ; and the following year I pursued the same course, at which time the row numbered about one hundred thrifty trees. In 1845, the largest of these I had grafted, and at the present time, one of these trees has fruit on it, being only six years from seed and four from graft.

In 1846, I concluded to commence a small nursery of fruit trees. Having previous to this obtained Downing's work on *Fruit and Fruit Trees*, and also Thomas's and Kenrick's upon the same subject, I had studied their manner of treating fruit trees, both in the nursery and as standards, and could fancy much pleasure in the same. At this time I sowed seed of various kinds, and bought a few seedlings suitable to bud the succeeding summer. My meadow being now about completed

and made dry, it gave me more room to extend my nursery. In the spring of 1847, I grafted a few apple trees on the root, with good success, and the following July commenced budding for the first time. At the present time I have my land so completely covered with trees, that I am forced to convey the dressing to it in a wheelbarrow.

Although I can do but little in the nursery myself, I usually go into it every day, (upon the wheelbarrow) and see what is in the most need of being done, and lay out the work for the day. Sometimes I work there myself, by getting upon my hands and knees between two rows of trees, and trim or weed them as I creep along. Sometimes I bud a few trees myself, but it being rather inconvenient for me to do this work,—I consider it better to work in the shop, and hire the budding done. It requires nearly all the work of one man now to attend to the nursery. The number of trees on the place at the present time is as follows :

Apple,	-	-	-	-	-	-	-	6787
Plum,	-	-	-	-	-	-	-	388
Cherry,	-	-	-	-	-	-	-	814
Pear,	-	-	-	-	-	-	-	2947
Peaches, Apricots and Nectarines,	-	-						640
Quince,	-	-	-	-	-	-	-	377

Whole number, including all varieties and sizes, 11,953

Together with a great variety of Grape Vines, Strawberry Plants, Gooseberry and Currant Bushes. The whole quantity of land cultivated is about one acre, there being about one third of an acre used for yard, buildings, &c. I raise between the rows of trees the various kinds of vegetables needful for family use.

One row of apple trees, one hundred and twenty-five feet in length, and containing four hundred trees, budded September last, now stand five and a half feet high, of the present year's growth. But to be more sure of a good growth another year I intend to transplant some of them. My apple trees have borne but little fruit yet, which I account for by the rapid growth they are making. My stone fruit trees would yield me

large crops, were it not for the curculio. I have tried many experiments to no avail, and some with more success. I have applied salt to plum trees since I first commenced growing them, using from one to two quarts to each tree, according to its size, spreading it in March or April under the branches of each tree as far as they extend. Although there is no perceptible diminution in the ravages of the curculio on trees thus treated, yet I use salt annually, as I perceive it to be of great benefit as a fertilizer. I practice washing my trees annually with potash, or strong soap-suds, and throwing dry ashes on the trees, when the dew is on them in the morning, and am not much troubled with insects, except the curculio, and sometimes the borer. The borer is only destroyed with knife and wire, by watching the trees.

I will here mention a successful experiment for the protection of the plum against the curculio. Last year I made two bags of old thin muslin and drew them over two limbs about the time the fruit set. Within each of these bags I saved a few beautiful plums, and not a plum did I save on any other part of the tree. Taking courage at this good success, I bought last spring a few yards of bonnet lining which I made into bags, according to the size of the limbs I wished to cover. These I drew on the limbs of several trees, some when the plums had set, and others when they were in the blow; for I found the enemy had made their appearance while the trees were in bloom. Under each of these bags I saved plums, apricots and nectarines, upon limbs of twelve different trees; and these were the only ones I saved this year. The first of August I removed the bags, the curculio having disappeared. Some may think this would be too expensive, but I think not. The muslin would last many years; and by training the trees, or the branches in the right form, they might easily be covered, to the profit of the fruit grower. Be this as it may, I have found it of great use to me, as I had bought a variety of choice plum trees from which I did not like to use buds and grafts, until I had proved the fruit. This I have accomplished. One small branch covered by a bag, measuring six and a half by nine inches, contained twenty-one beautiful plums, hanging in

one solid cluster, causing the little limb to bend so much beneath its weight, as to require a prop to support it. Upon another tree (the Moorpark apricot,) I saved eight apricots, under a very small bag. I am training some apricots and other trees in the form of a fan, to make them the more convenient to be covered with the muslin.

I would here mention that I have this summer been using refuse tobacco with good success in driving away the insects. On throwing the dust, or snuff into the tree, we can see the rose bugs and other insects leave the tree immediately. I also use it around the roots of peach trees for the borer. Until within two or three years, the only manure used by me, has been the compost made in the summer, as follows: weeds, potato tops, pea, and bean vines, or any other vegetable matter, mixed with sand and loam in alternate layers, when for low land; and with muck, when for upland. This heap would receive the scrapings of the yard, road-side, and also the washings from the house daily, together with some salt and ashes; this, with the manure from the pen of one hog, mixed with it, has been all the manure I have used until 1846. Then I bought a cow, and in 1847 a horse; of these, about half the manure has been used on other lands.

Although I have been many years doing what capital could have done in much less time, yet I have the satisfaction of building up my little place by my own industry; laboring under very unfavorable circumstances, without capital, and without the use of my legs. But now I am in a forest of fruit trees, planted by my own direction; and the soil drawn upon the roots by my own hands, as I sat upon the barrow or box. I can now view the works of the Almighty in the growth of these trees, and the production of their fruit.

METHUEN, *September 3d*, 1849.

GRAIN CROPS.

There was but one claim for a crop of wheat, which came within the rules of the society,—that of Henry Poor, of North

Andover ; he having raised, on two hundred and twenty-seven rods of land, thirty bushels of spring wheat, being a fraction over twenty-one bushels to the acre. Mr. Poor has also raised, on half an acre of ground, fifteen bushels of white flint winter wheat. The committee are not aware, that the cultivation of this kind of wheat has been much attended to in this county, although, in many parts of our country, and especially in Western New York, it is very generally cultivated.

In the Transactions of the Society for 1833, will be found a statement of the late Hector Coffin, of Newbury, in relation to an experiment made by him, with the same kind of wheat, which was received from Western New York, and which produced a much greater yield than that of Mr. Poor. Mr. Coffin states, that, from eight and one-fourth quarts, he obtained, from a piece of ground not exceeding one-quarter of an acre, *twelve* bushels of clean, good grain, plump and beautifully white. From these statements, the committee feel themselves authorized to recommend to the farmers of Essex, the cultivation of this kind of wheat.

Mr. Poor also raised, on one hundred and thirty-three rods of ground, forty bushels of barley ; and Daniel Osborn, of Danvers, on half an acre, nineteen bushels of winter rye ; but neither claim coming within the rules of the society, (one acre,) the committee do not feel authorized to award any premium.

There were four claims for the premium on Indian corn. Joshua Foss, of Byfield, raised, from an acre, two hundred and five bushels of ears, equal to one hundred and two and a half bushels of shelled corn. Henry Poor, of North Andover, raised ninety-three bushels to the acre ; and Daniel Putnam, of Danvers, eighty-four and thirteen-fifteenths bushels. The statement of the other competitor, Moses Pettingell, of Topsfield, has not been received. The ears of Mr. Poor's corn were much larger than those of Mr. Foss's ; and the committee are fully of opinion, that the medium sized corn is much more profitable to the farmers of Essex, as a general rule, than that of the largest size.

They recommend that there be awarded to Henry Poor, of Andover, for his acre of spring wheat, the society's premium of		\$8 00
And also, for his half acre of winter wheat, a gratuity of		6 00
John Noyes, of Newbury, for his acre of summer rye, the premium,		8 00
Joshua Foss, of Byfield, for his acre of corn, the premium,		8 00

DANIEL ADAMS, *Chairman.*

Henry Poor's Statement.

I present a statement of facts, in relation to my success in raising the following crops, to wit:—

On two hundred and twenty-seven rods of ground, I have harvested thirty bushels spring wheat; a fraction over twenty-one bushels to the acre.

On one hundred and thirty-three rods of ground, I have harvested forty bushels of barley; which is forty-eight bushels three quarts to the acre.

On a half acre of ground, I have harvested fifteen bushels of white flint winter wheat, which is equal to thirty bushels to the acre; the quantity falling short of the society's rule, requiring one acre to produce twenty bushels.

Allow me to add a word in relation to the growing of winter wheat, and a few remarks as to my experience. I would suggest the importance of this crop to all farmers, being convinced that it is as sure and safe to cultivate, as that of winter rye, and as little liable to winter kill. Like all other crops, to be made profitable, it requires good soil and good cultivation; and an advantage to be gained is, that after you have taken off your hay crop, the green sward may be turned in, and you are more sure of a wheat crop, than on land that has been two or three years cultivated with other crops. I have found ashes, or slacked lime, to be good, sowed on in the spring; and would also recommend rolling, as soon as the ground is sufficiently

dry, in the spring. It adds compactness to the soil, and spreads the stocks of the wheat, that often come up in clusters. The same advantages are apparent, as in rolling newly laid down grass land,—pressing in the roots, which have become exposed and thrown out by the action of frost.

I should urge the cultivation of winter wheat in preference to spring, for good and valid reasons. First, the yield will be far greater. Second, the quality of grain much better. Third, (and the great desideratum,) the grain will ripen three to four weeks earlier than spring sown, being in advance of the season of rust, which often overtakes spring wheat in its ripening process. I trust the subject of wheat growing will become of more importance to New England farmers generally; and when they shall have tried and fairly tested the experiment, I feel sanguine, no man calling himself a farmer, will overlook this valuable crop.

NORTH ANDOVER, *Sept. 24, 1849.*

Joshua Foss's Statement.

I offer for premium, a crop of Indian corn, obtained from an acre of land, and measuring two hundred and five bushels of ears, or one hundred and two and a half bushels of corn, to the acre. The corn is the eight-rowed yellow kind,—not the largest, but of medium size,—and was planted the first and second days of May; land, a dark loam, with a light subsoil. In 1847, the land was broken up, and planted with corn and potatoes, and well manured in the hill. In 1848, about three-quarters of the land was sowed with oats and barley, without manure; the other quarter was manured, at the rate of twenty loads to the acre, spread on, and planted with potatoes.

In 1849, I spread on twenty-five cart loads of stable manure, thirty-five bushels to the load, and ploughed in at least eight inches deep. The ground was harrowed and furrowed; the rows three feet apart, the hills two and a half feet, and fifteen loads dropped in the hills; the corn dropped, and carefully covered.

At the second hoeing, the corn was thinned out, and only three stalks left in a hill. The rows ran as near north and south as possible. The corn suffered little from the drought, which I attribute very much to the deep ploughing. At each hoeing, the surface of the ground was kept as near a level as possible. The stalks were cut about the 15th of September, and the suckers were all carefully cut out.

The corn was harvested between the 20th and 25th day of October. In addition to the corn, there were about fifteen bushels of potatoes on the same land, planted in the outside rows, to protect the corn. The following is the amount of labor done, the present season:—Four days with men, and two with oxen, hauling, spreading, and dropping the manure in the hills. Ploughing and harrowing, one man and two horses, three-quarters of a day. Man and horse, four hours' furrowing. One man, two days' planting, with boy to drop the corn. One man, boy, and horse, five hours' cultivating. Hoeing, the first time, four days. One man, boy, and horse, four hours' ploughing between rows. Hoeing, the second time, two days' work. Cutting and binding the stalks, four days' work. Harvesting, six days' work.

BYFIELD, Nov. 8, 1849.

P. S.—Nov. 16.—I have, this day, shelled two bushels of ears of the above corn, and found the yield to be, one bushel and four and a half quarts.

Henry Poor's Statement.

I have carefully measured one acre of corn,—have measured the ears, and shelled a bushel basket full,—and have ascertained the exact product to be ninety-three bushels to the acre.

My whole field was a little rising three acres, and the corn is uniformly as large as the measured acre. It suffered very little from drought. A few hills, in a dry corner, were rolled. Many of the spindles were nine and a half and ten feet high. If any of the committee will inform me how to dispose of the

butts, I would thank them. I have been advised to sell them for "cord wood;" they are unprofitably large for fodder.

About half of my soil was sward land; the other had been three years in corn. I could not say which was best. I manured, and ploughed in,—also, manured in the hill. At weeding time, I applied a handful of ashes to the hill. Planted three and a half feet one way, and two and three-quarter feet the other way. My manure was all made in a barn cellar; which, in my humble judgment,—with the working of swine amongst it, the saving of all the urine of the stock, and the saving of *evaporation*,—mixed with loam, or muck, makes it worth thirty-three and a third per cent. more, than if suffered to lie in an out door exposure, subject to drying winds and washing rains.

My practical experience in farming has been small, but what little I do know, induces the belief, that a little good farming pays better, and gives more satisfaction, than a large amount of poor farming. Make one acre, well manured, do the work of two, half manured,—how much labor would be saved?

In seed time, it was not my purpose, or thought, to offer a crop of corn for premium; but the harvest justifies me in so doing. And should I fail to meet the views of the committee, it would not deter me in the effort of good cultivation.

NORTH ANDOVER, 1849.

Daniel Putnam's Statement.

The amount of corn raised by me, from one acre of land, the present season, is not so large as I have before raised, yet it may be entitled to your favor. The land upon which it grew, is a light, loamy soil, having a level surface. It has been used, for some previous years, in the cultivation of carrots and onions. Last year, it was enriched with compost manure, using about seven cords to the acre. The portion sowed for onions, produced at the rate of two hundred and seventy-five bushels to the acre; that for carrots, at five hundred and fifty bushels per acre. On the first of May last, three and a half cords of

compost manure was spread upon it, then ploughed eight inches deep,—taking a small furrow-slice, so that the land was not inverted. On the fourth of the month, it was marked out in rows, four feet apart, each way ; then planted, putting manure in the hill, of the same kind and quantity as had been spread. The large, eight-rowed corn was used for seed, allowing five kernels per hill. During the month of June, the cultivator was often passed through the growing corn, but little was done with the hoe. The surface was kept level, and sown with grass seed on the 23d of July. The top stalks were cut the first week in September,—corn harvested November 1st and 2d. The product, as you will see by an accompanying certificate, was 6,365 net pounds ; allowing seventy-five pounds per bushel, making eighty-four and thirteen-fifteenths bushels.

Estimated Expenses of Cultivation.

Ploughing with a pair of horses, in three hours,	. \$ 1 00
Two and a half cords of barn cellar manure, at \$7	
per cord,	17 50
Four and a half cords of meadow mud and soil,	4 50
Cost of mixing, two days' labor,	2 00
Carting and applying,	5 00
Dropping and covering corn,	1 00
Seed Corn, (one peck,)	25
Use of Cultivator,	2 50
Hoeing,	2 50
Furrowing,	50
Cutting and binding top-stalks,	2 50
Harvesting,	5 00
	<hr/>
	\$44 25

Estimated Value of Crop.

6,365 lbs., at one cent per lb.,	. \$63 65
Value of Fodder,	17 00
	<hr/>
	\$80 65

On weighing seventy-five pounds of the corn, it was found, on shelling, to measure one bushel,—the cobs weighing nineteen pounds.

Perhaps I may here say, that when a larger yield has been obtained, I have planted nearer together, and have used a larger share of stable manure.

NORTH DANVERS, Nov. 8, 1849.

ROOT CROPS.

It is proposed to speak of a few of the most important roots, and commence with *Mangel Wurtzel*, sometimes called Root of Scarcity, sometimes Field Beet, and in Germany, always *Mangel Wurtzel*.

This root was cultivated considerably for stock some years ago, but I am not aware that it receives much attention at this time. It is a more exhausting crop than the turnip or onion; but it contains double the nutritive matter of the turnip, and will consequently warrant double the manure.

Mangel wurtzel, according to the analysis of Mr. Harepath, of Bristol, Eng., contains 136 parts of nutritive matter, (sugar and starch,) as often as the Swedish turnip gives 64, and as often as the white turnip gives 42. The Swedish turnip has innumerable enemies, but it is not known that the wurtzel has any. When sown alongside of the turnip, the latter is often found ruined with insects, while nothing whatever has troubled the former. The wurtzel also keeps better. They often cut perfectly good in July, and even in August. They will not, like the onion, bear to be continued many years on the same spot, but require a new one every few years; this, at least, has been my experience. Perhaps more manure would have answered every purpose.

Manner of sowing.—The ground must be ridged with a small plough, and great care should be taken that the seed is not sowed too deep. The seed sower also fails in depositing seed that has been prepared as this ought to be, by steeping it at least twenty-four hours. A writer in the *Farmers' Encyclopædia*, recommends using an iron wheel; but a cheap wooden one, such as every one can make, will answer the purpose. Upon the outer circumference of the wheel, there should be

either iron or hard wood points, eighteen inches apart, about two and a half inches long, and tapering from the base to the point. This is to be wheeled along upon the top of the ridge, and thus holes will be formed, will remain open, and will be of uniform depth. Then follow and drop the seed by hand, and it may be covered at the same time, by drawing the foot at right angles with the ridge. Follow with a hand roller, row by row, or a light horse roller, pressing several rows at a time. The trouble consists in having two or more plants grow from the same seed. Every capsule contains several seeds, and thinning must be attended to while the plant is very small.

Wurtzel may be raised upon a stiffer soil than the turnip, but as it grows much out of ground, it will not bear the cold so well. The tops, though not so abundant, are a rich food for milch cows, and impart no taste to the milk or beef.

In harvesting the mangel wurtzel, care should be taken not to wound the roots. There is something in the old idea that they will bleed if cut. The fibrous roots had better be left on, and some of the top too, than wound the beet by trimming too close. Care should be taken in feeding out to the cattle, as by using too many, especially in the first part of winter, they are apt to scour.

It is said by a French writer, the Abbe Rosier, that the leaves of the mangel wurtzel may be taken off every fifteen days after about the first of July, and fed to the cattle. There can be no question but milch cows would do well on them, but it is subversive of all our ideas of vegetable physiology, that the root should grow without the leaves. The root must stop and wait for the leaf, because that alone forms the communication with the oxygen of the atmosphere. Leaves are the lungs; and the experiment of taking them off once in fifteen days, must be a dangerous one.

When milch cows are fed *chiefly* upon this root, they give more milk, and a richer and thicker cream for about a fortnight, after which they grow too fat, and the milk lessens. Hogs do about as well on the *raw beet* as they will on *boiled potatoes*.

As to the quantity to be given, it is said that thirty-six

pounds of these roots and eight pounds of English hay a day, given at two feedings, half at each time, will make a cow give as much milk as in the flow of summer feed.

An experiment of great value to root growers, was made some years ago, showing the comparative feeding properties of mangel wurtzel and Swedish turnips, which may be introduced with propriety here. The experiment was made by Lord Spencer. He took two steers, weighing 668 pounds each, and of the same age, wanting some six weeks. On the 24th of December he put No. 1 to Swedish turnips, and No. 2 to mangel wurtzel. On the 23d of January following, No. 1 had consumed 1624 pounds of the turnip, and had increased in weight thirty-five pounds, or, at the rate of forty-eight and a quarter pounds for every ton. No. 2 had consumed 1848 pounds of wurtzel, and had increased fifty-three pounds, or, at the rate of sixty-five and a half pounds for every ton. The trial was now varied. No. 1 was put to mangel wurtzel, and No. 2 to Swedish turnips. On the 20th of February, No. 1 had consumed 1884 pounds of wurtzel, and gained this month thirty-one pounds, or, at the rate of thirty-six and three-quarter pounds for a ton. No. 2 consumed 1880 pounds of the turnip, and gained thirteen pounds, or, at the rate of fifteen and a half pounds for every ton. Further experiments were made upon the same animals. It seems thus far clear, that the balance was in favor of mangel wurtzel, and no trial made disproved the fact.

Sugar Beet.—It has been stated in the newspapers recently, that a French chemist had discovered a method of procuring something like three times as much sugar as formerly from this beet. In our country, however, it is not probable that the cultivation of the cane will be relinquished for sugar beet. They are valuable in stock, nevertheless, and if all farmers should succeed as Mr. Fuller did at Nahant, in 1840, it is a question whether any crop would be better worth cultivating. He raised at the rate of 1300 bushels, of fifty-six pounds weight, on one acre, which is nearly thirty-six and a half tons. These beets are often packed in barrels and shipped to the south. A common price is \$1.50 per barrel.

They may be planted on ridges, four feet apart, in double rows, and the intermediate spaces may be sowed with turnips. It is a very good way, however, to put them in single rows, twenty-seven inches apart. Like the wurtzel, they are a more exhausting crop than any kind of turnip—but, unlike every kind of turnip, are always free from destructive insects. The land should be mellow, ploughed deep, and manured well, both fall and spring, though this is not indispensable.

Onions.—It is unnecessary, since the Essay on this subject, by the President of the Society, to say much about the onion. Unlike almost every other root, it does best by being continued on the same ground. A gentleman writing in the (old) New England Farmer, says he is now raising a fine crop of onions on a piece of land where they have been sown for *eighty successive years*, as nearly as he can determine. This fact is an important one, because, when the ground is once clear of weeds, it is much easier to keep it so than to clear a new piece.

Many a piece of ground has been abandoned for onion raising, just because they did not seem to do well on the first trial. But it has been quaintly remarked by observing farmers, that almost any rich land will bear onions after it *gets used to them*, and there is a good deal in it.

Turnips.—*Inducements to cultivate them.* No such malady as has prevailed among potatoes, has ever yet assailed the turnip. It is, indeed, subject to insect ravages, but these are open and palpable, and can be detected so early in the season, that means may be taken for ridding the plant of them; and, if ineffectual, the crop may be ploughed in, and something else done with the land the same year. But the *labor* of growing an acre of turnips is less than one of potatoes or of corn, while the produce is double. I went on to an half acre of land which had been ploughed, with one hand, on the 26th of last May. With the horse, and cultivator spread wide, and one tooth only on each side, we furrowed the land, sowed the seed by hand, and covered it with a common hay rake, using sometimes the teeth and sometimes the head, in little more than half a day. To have planted with potatoes must have taken

longer. With a seed-sower it could have been done quicker, and probably better. I have stated the fact, however, so that none may be deterred from raising root crops on account of the labor. As to the subsequent labor, the ploughing between the rows is the same as among potatoes, of course—thinning and transplanting are extra, it is true, but if very thick you obtain some fodder, or if the plants be left on the ground, some manure. The hoeing is about the same as hoeing other crops,—and in harvesting, by help of the plough run along side of the rows, it is obvious that the same quantity could be gathered in far less time. I have referred to the French turnip, in the above remarks,—a name, however, which has almost entirely disappeared from the books and agricultural papers, *Swedish* turnips being almost the only thing of the kind now talked of.

They suffer less from frost.—Turnips can be left safely in the ground till all other crops are gathered in. The ground may freeze quite hard without serious injury to the crop; and then they may be kept in a cellar entirely too cold for any other roots.

They will keep *late* in the spring, if kept cold. The English turnip grows *corky*, but the French and Swedish do not.

Swine will grow and fatten on them.—Judge Buel said that his neighbor Bement, of Albany, kept twenty hogs, mostly full grown breeders, from the 1st of November to the 15th of February, in the winter of 1838 and '39, upon ruta бага and buck-wheat bran, giving them six bushels of roots and one of bran each day, at three feedings—two of the feedings being on raw roots, and one on boiled. "When he began to feed with the roots, the hogs were low in flesh; at the termination of the three and a half months, they were too thrifty for breeding, and some of them fit for the butcher. The owner estimated that four quarts of corn to each hog per day, for all that time, would not have brought them into a better condition than did the turnips and bran." The corn, at seventy cents per bushel, would be worth one dollar and seventy-five cents per day. The six bushels of roots, at twenty-five cents per bushel, would be worth but one dollar and fifty cents. The bushel of bran would cost but a trifle, of course. But suppose the expense were

equal. An acre of turnips does but moderately well when it produces 600 bushels to the acre ;—this would be equal to 100 bushels of corn, which is an amount that few fields in Massachusetts ever produce.

Neat Cattle do well on turnips.—Gov. Hill tried it in the winter of 1839. He gave his oxen turnips once a day, cutting them with his own hands ; and he says, that with the aid of the coarsest interval hay, they worked nearly every week-day, and continued to thrive ;—and cows, fed with the same, and corn butts and oat straw, yielded milk abundantly—much more, says he, than if fed on the best hay. The objection that the milk tastes of the turnip, is not well founded ; it will taste if cows eat the *tops* ; and so will the beef of the animal that feeds on tops ; but the most abundant feeding of the root itself communicates no disagreeable flavor, but contributes to the flesh of the one and the milk of the other.

Neat cattle and sheep have trebled in England since the culture of the turnip crop commenced, about fifty years ago ; and the increase is attributed, by writers on the subject, almost wholly, if not entirely, to the turnip culture. “English agriculture has been revolutionized by it.” Mr. Webster saw there fields of turnips, of three, four, and five hundred acres. The great extent of the turnip culture in Scotland, is evidence that such crops cannot be unsuited to Massachusetts, as the climate there resembles ours much more than the English does.

Objections considered.—“Few barns,” it is said, “have a suitable cellar, and the labor of storing a large crop of turnips in the house cellar, and of carrying them to the barn as they are wanted, is an insuperable difficulty.” The labor would not be trifling, but how many tons of English hay, that could be spared in consequence for the market, would it require, to hire a boy to do all the carrying ?

“Insects attack every kind of turnip.” This objection is a great one, it is admitted. The half acre of turnips of which mention was made above, was green as the sea on the 1st of July last, and about the 15th there were some half dozen spots where the turnip louse was commencing. By the 1st of August, every leaf was covered, and remained so a little more.

than two months, when they yielded to a cold storm and disappeared rapidly. They staid too long, however, for the crop. It was estimated in June that there would be five hundred bushels upon the half acre—there cannot now be one hundred bushels.

But this may not occur again in ten years. Besides, some very simple remedy may be yet discovered. When the government of Sweden called the attention of Linnæus to the fact, that all the ship timber in the dock was worm-eaten, he discovered the cause to be a little fly, and so simple a thing as laying the timber under water for the few days, during which the fly laid its eggs, prevented the difficulty entirely. Some other Linneas may find, that though he cannot lay a turnip lot under water, there may be a kind of water which can be sprinkled upon the turnip, destructive to the louse, and yet safe for the plant. I would recommend an experiment, beginning with soap-suds, adding dissolved potash gradually, going from medium strength to one that would color the leaf. Animal life would feel it before vegetable. Something short of the death of the plant would kill the louse, there can be no doubt. Much observation would be necessary to determine what strength of alkali would be required, but, as the turnip aphides is so perceptible to the eye, any one can ascertain when it is sufficient to overcome the insect. It will be a triumph worth achieving to overcome this pest, so contemptible for its size, yet so mighty for its numbers. Like the army-worm, nothing vegetable can stand before it.

With respect to using potash upon the turnip, though as before stated, a strength that would spare the leaf, might destroy the insects; yet, even if the leaf were killed and cut off with the scissors, it would be a smaller evil than to allow the ravages to go on, because, though the leaf should be killed with the alkali, a new one would grow long before the louse would otherwise leave it. The insect began to disappear, in the case referred to, before the middle of October, and new leaves, in many cases, began to grow; but it is obvious that the leaf would have grown long before that time, had it been cut off by the first of August.

Manure.—Any manure almost will answer for the French or Swedish turnip. Upon the half acre referred to, which is an island in Essex River, called Dilley Island, I spread rockweed and other sea stuff, such as is washed up by the tide. This was the only kind of manure that had for previous years been used. Probably the plants derived their support from the rotten manure of the last year.

Quantity of Seed.—One pound of good, is sufficient for an acre. This will cost, at the seed-store, about seventy-five cents.

Preparation of the ground.—If the soil has dog-grass in it, the rows should be made across the furrows—that is, should run across the furrows made in ploughing the field, and these rows should be made, not with cultivator teeth, but with a pair of oxen or horses, and a plough large enough to go through the dog-grass turf, and then mellow soil hoed in to fill these cross-furrows, so that the plants may have a free soil to work in. And one excellent effect of a French turnip crop upon dog-grass is, to shade, and smother, and extirpate that foul weed.

Since the potato has been suffering from the inscrutable disease which has prevailed so fearfully, French turnips have come in as a tolerable substitute for the table. A farmer in Essex, who raised them among his corn, sold them at fifty cents per bushel, for cash, at Gloucester market.

The cultivation of roots crops is receiving increased attention, and in some departments of it the products bid fair to exceed in value almost every other product of the garden or field. Three hundred acres of the best land in Danvers are devoted to the onion. It is painful to learn, as we do from Mr. Proctor's letter, appended to this report, that there has, this year, been a comparative failure. Had an average crop been obtained, of 400 bushels to the acre, the yield in that town would have been 120,000 bushels. The Indian corn crop, in Danvers, a few years since, was valued by the town assessors, at \$8357 only, while the onions, this year, at fifty cents a bushel, with the success which has generally attended, would have been worth \$60,000. This is nearly twice the value of all the English and other hay raised in the same town in the year 1844.

It will be seen by the letter referred to, that, owing to the heat, or some other cause, the onion *louse* has this year made its appearance. This is greatly to be regretted. No conceivable drought or heat is so much to be dreaded, as an army of insects. The destruction of the tribes that occasionally assail our crops, is a subject of sufficient importance to call forth the united energies of the Agricultural Societies throughout the world. Let premiums of sufficient value be offered to naturalists, at home and abroad, to induce them to turn their attention to this subject. It is no place here for more than a hint. But the N. E. Farmer, of 27th October, informs us, that on a farm in Michigan, near Fort Huron, during the past summer, the army-worm so called, has "marched through field after field, in solid phalanx, devouring every thing in their way. Where a crop of 5000 bushels of oats was expected, there will not be a single bushel. One tenant was driven from his house, and the owner, on the opposite side of Black River, was able to keep possession of his dwelling only by attacking them on the bridge and sweeping them into the river." And the destruction of whole fields of turnips by the louse, in the county of Essex, is a sufficient admonition to prepare for such an insect invasion as certainly seems to threaten a famine to some of our indispensable crops.

One crop only has been entered with the committee for premium. This is by Francis Dodge, of Danvers. The crop is one of carrots, at the rate of $28\frac{3}{4}$ tons per acre, and the committee think that he is entitled to the society's premium of six dollars.

DAVID CHOATE, *Chairman*.

Francis Dodge's Statement.

I offer for premium a crop of carrots, raised on 192 rods of land; the product being 1046 baskets, a basket weighing 66 pounds, making $34\frac{1}{4}$ tons, or, at the rate of $28\frac{3}{4}$ tons per acre. The land was a dark loam, resting on a subsoil of clayey gravel, and would be called, by most persons, rocky land. A crop of carrots was taken from the land last year—the exact

amount I do not know. The manure applied was about seven cords of mussel-bed per acre. This year it had ten cords of manure from the barn cellar, spread upon it and ploughed in, the first of May, the plough running about ten inches. After this ploughing, it remained a week or ten days, giving time for the weeds to start, when a heavy harrow passed over the ground, killing most of them. On the 20th of May it was ridged up with a small plough, drawn by a horse, going twice in the same furrow. My reason for thus ridging the land was, I thought it less expensive to rake the rocks into the dead furrow, than in any other way to get rid of them; though there cannot be so many rows on a given piece, the seed being sown on the ridge. The rows were twenty-two inches apart. After the land was ridged, a common hand-rake passed over them, leaving nearly a level surface.

Upon this ground, one pound of seed of the common Orange variety, was sown from a wooden machine. The carrots were hoed three times, and weeded twice, the last hoeing being just before the tops covered the ground. They were dug with a spade, and the tops carefully saved and fed to my cows, the tops at that time being knee high. Perhaps I ought to remark, that on one side stood a row of apple trees, that damaged the crop some five tons.

The expense of cultivation was as follows:—

Interest on land, at 6 per cent.,	.	.	.	\$7 20
Ten cords of manure, at \$6 per cord,	.	.	.	60 00
Spreading the same,	.	.	.	3 00
Ploughing do.	.	.	.	2 50
Harrowing do.	.	.	.	2 00
Ploughing with horse and raking,	.	.	.	4 00
Seed,	.	.	.	1 00
Sowing,	.	.	.	1 00
Hoeing and weeding,	.	.	.	15 00
Digging,	.	.	.	21 00
Total expense,	.	.	.	<u>\$116 70</u>

Value of crop, thirty-four and a half tons, at

\$7 per ton, \$241 50

Value of tops,	\$ 7 00
One half of manure to land,	30 00
	<hr/>
	\$278 50
Deduct expense,	116 70
	<hr/>
Net profit,	\$161 80

DANVERS, Nov., 1849.

DANVERS, Oct. 30, 1849.

DEAR SIR,—I am pleased to learn that you will prepare a Report on the Cultivation of Roots, notwithstanding our cultivators have failed to forward statements of their crops the present season. It seems to me quite as important to take notice of the failure of crops, and to trace the causes thereof, as their success. I will state, briefly, such facts as have come to my knowledge, from intercourse with the cultivators of this neighborhood, to be used at your discretion.

1st. As to the *Onion crop*.—In this there has been a failure. Not more than half the usual quantity raised to the acre, upon an average. The cause of this failure is thought to have been, not so much the *drought*, as the *extreme warmth*, in the early part of the season. Shortly after the warm days referred to, the onions began to falter, and in many places became lousy, or covered with a small light-colored insect, that stints and impedes the growth of the plant; some fields were entirely destroyed in this way. This happened quite as extensively among the most careful cultivators as others. More on ground long appropriated to the onions, than new land. Some fields suffered from the *drought*, where the ploughing had been shallow for several successive years;—but, generally, the failure in the crop is supposed to have been occasioned by the cause first mentioned. Very few have obtained more than *three hundred bushels* to the acre, where they expected *four or five hundred*; generally the crop has been less than *two hundred bushels* to the acre. Taking into view that three hundred acres, at least, of our best lands, the present season, were appropriated to the

growing of the onion, the town has been taxed more heavily, in the *loss on this crop*, than in any other manner.

2d. As to the *Carrot Crop*.—It is good—never better. Many fields yield twenty tons and upwards to the acre. This plant is extensively cultivated. Carrots readily sell per ton, at more than half the price of English hay. They are thought to be a sure and valuable crop. They will not do well for several years in succession, on the same land. Notwithstanding the drought was very severe in August and September, it affected this crop very little. I have heretofore remarked upon the benefits accruing to the land from the cultivation of the carrot, and have attributed it to the deep stirring, incident thereto.

3. As to the *Beet Crop*.—Some farmers have raised a very good crop of the *turnip beet*, and esteem it a valuable product; but generally, the beet is not much cultivated; not so much, I think, as it ought to be. I have seen a few patches of the sugar beet, of limited dimensions, very well grown.

4. As to the *Potato Crop*.—Potatoes are very fair in appearance and abundant in quantity—but of doubtful character. Some farmers have lost more than half their crop, within a few weeks after they put them into their cellars. Others are so doubtful as to the character of the potatoes, notwithstanding their entire fair appearance, that they are unwilling to take them to market, through fear that they will prove valueless. As near as I can learn, one-half of the expected crop of potatoes in this town, the present season, will be lost. The man who shall trace the true cause of this blight, and prescribe an adequate remedy, will render the community a service of more value, than has ever been rendered by the most successful military chieftain. I have written the above, under the impression, that, if we could obtain, from eye-witnesses, an exact description of the actual state of the products in their respective neighborhoods, in all the towns of the county, it would afford a mass of information, when continued for several years, of very great utility.

Very truly yours,

J. W. PROCTOR.

TO DAVID CHOATE, Esq.

EXPERIMENT ON THE CULTIVATION OF POTATOES.

SALEM, *Nov. 19th*, 1849.

DEAR SIR,—Having devoted a large portion of my life to the pursuits of agriculture, allow me to make some remarks respecting the culture of potatoes. Never having found any of the early kind of potatoes that yielded to my satisfaction, I was induced to try several modes to find a remedy for the evil. My first experiment was reported to the trustees of the Massachusetts Society for the Promotion of Agriculture, as follows :—

SALEM, *Dec. 1st*, 1820.

HON. JOSIAH QUINCY :

DEAR SIR,—Observing the produce of a few potatoes, which I transplanted last year, to be very good, I was induced this season, to try the experiment upon a somewhat larger scale. About the 1st of April, I took some late white potatoes, after cutting them, placed them in a hot bed, as close as they would lie, and covered them with earth. On the 24th of April, the plants being in fine order, some of them twelve inches high, I took them up, and separating all the shoots but one, from the parent potatoe, I made drills about three feet apart with a hoe, and filling the same with well digested manure, I transplanted, as I should cabbage plants, the whole of the shoots, about nine inches apart, in the drills. On the 3d of May, there was a very sharp frost, which injured the tops of the plants very considerably ; they in a few days recovered, and grew very rapidly, scarcely one of them failing. The rows were twice hoed. On the 30th of June, I commenced using new potatoes, the size large and very fine, equal to any taken up in October ; finished digging them on the 10th of August : the land measured ninety by fifty-two links of the chain, on which stood one pear and one plum tree, and produced at the rate of two hundred and ninety-five and three-quarter bushels per acre. The rows might have been much nearer, consequently, the produce would have been greater. I could not perceive any difference in the yielding of the plants, between those which were separated,

and the ones which adhered to the potato. Should I try the experiment again, I should take all the plants from the potato and replant it, as it appeared as fresh and sound as the day it was first put into the ground.

E. HERSY DERBY.

My second experiment was reported to the same Trustees.

Account of four crops of potatoes raised in one season:—

April 10th, 1821. Planted half bushel of late potatoes, part kidney and part round ones, cut into sets in a hot bed.

May 7th. Transplanted first set of vines, as I should cabbages, and replanted the sets.

May 21st. Transplanted the second set of vines, and replanted the sets.

June 5th. Transplanted the third set of vines, and replanted the sets, and hoed the first and second sets of plants.

June 30th. Transplanted the fourth set of vines.

July 1st. Commenced digging full grown potatoes from the first set of vines, since which, my family (a large one,) has been fully supplied, and I have lately commenced digging the fourth set of vines.

The potatoes exhibited were taken from the third and fourth set of vines, and there are very few small ones.

E. HERSY DERBY.

SALEM, Oct. 1821.

I could have extended the experiment much farther, and have no doubt I could have raised six different crops the same season, as the sets were still in fine order, when I left off the experiment. I once tried raising potatoes from the sprouts left in the cellar after the potatoes were removed in the spring; they were planted in a good soil in a single row, they vegetated very readily, but were very feeble the first part of the season, for want of nourishment from the parent set; the season proving favorable in the autumn, I dug a tolerable crop of good sized potatoes.

The present season I took two potatoes, weighing together,

three-quarters of a pound, and cut them into twenty-seven pieces, each having an eye, and planted them in two flower pots, in my green-house ; the latter part of April, when they had grown to about eight inches in height, I turned them out of the pots, and planted them out in my garden, without the sets, in rows ; this fall I dug from them very fine, large potatoes, without any small ones, weighing forty-six and a half pounds. Observing in the garden the last spring, several plants of potatoes that had lived in the ground through the winter, where I had raised potatoes the previous year, I was induced to take them up and transplant them. I was surprised to find, on digging them this fall, a very fine produce of remarkably large potatoes. From these experiments, I have satisfied myself, that this is the best mode of raising early potatoes. You get none (or a very few) small ones this way. I have observed fully, that the parent set is only wanted to afford nourishment to the plant in its infancy ; after it has formed roots, it does much better without the parent set. In digging potatoes, I have frequently observed, that where we found the set not decayed, the yield was far inferior. I think it extracted nourishment from the plant, rather than furnished any to it. I hope these experiments may prove of some use to the farmers of Essex.

Your sincere friend,

E. HERSEY DERBY.

To ALLEN W. DODGE, Esq.

EXPERIMENTS ON MANURES.

We have seen many instances of marked success in composting manures, and some well worthy of imitation. One farmer, whose farm abounds in peat muck, and whose cultivated lands are composed mostly of sandy loam and gravelly loam, has applied compost to his crops with marked success. The last season, most of the crops in our county suffered from drought in mid-summer ; his cultivated crops escaped the effects of it. There was nothing peculiar in his method of cultivation, except

that he applied his manure to the surface and harrowed it well in; and in cultivating corn and other hoed crops, kept a level surface, without hilling up; as it is barbarously called, and more barbarously practised. This farmer's corn, planted in hills four feet apart, was judged to yield sixty bushels to the acre. His potatoes, planted with compost, mostly escaped the rot, while those planted on long and unfermented manure suffered much from it. His onions yielded well, while on stable dung, mussel-bed, and the manures usually applied, the crop, owing to the drought, was in many places, almost a failure. For carrots, beets and turnips, this compost has been found equally effectual; nor are its effects less lasting.

This farmer, who finds himself so well compensated that he does not ask for the Society's premium, has made within the last eighteen months, more than five hundred loads of compost manure. At times, when the ordinary work of the farm does not press, he employs his laborers and team in carting into his barn and swine yards, swamp muck and peat; this, after lying some months and imbibing the droppings of his stock, is ploughed up, and after farther exposure to their tramping and dropping, is thrown into heaps, where it lies ready to be carried to the field. It is thought indispensable to have the muck thoroughly rotten and decomposed. A piece of peat as large and hard as a brick, is as valueless for fertilizing purposes as a stone of equal size; but crumble it up, mix it with some heating manure, and decompose it, and a load of peat compost is worth more than a load of barn dung. When a sufficient quantity of dung and urine has not been dropped in the yard upon the muck, it is advisable to add more to the heap, and the farmer is well paid for the additional labor of again forking over his manure; the finer and more *snuffy* it is made, the better it is adapted to furnish food to the roots of plants.

Another method of making compost is, to cart directly into the field where it is intended to use it, your swamp muck or peat, and there compost, by making first a layer of muck about four inches in depth, then a layer of dung,—horse dung is decidedly the best for this purpose,—and so on, till your heap is four or five feet in height, being careful to cover the whole

with muck or earth, so that the ammonia shall not escape. In making a compost, you may use one load of dung to three or four of muck, just in proportion to the strength of the manure. In warm weather, with twice faithful forking over, your compost will be ready for use in six or eight weeks, (and this is timely for use in the autumn,) but it is always essential that the peat should be thoroughly decomposed. Such a compost on loamy, gravelly, and sandy soils, is better than clear manure for crops of corn, potatoes, vegetables of any sort: and for rye, no manure surpasses it.

But if you want a compost that will make your fields rejoice with a luxuriant harvest, and that will be permanent in its effects, to the muck and manure add ashes in the proportion of twenty-five or thirty bushels to a cord of compost. But weed ashes and leached ashes are too dear. That is true. And all the manure we purchase in our county costs as much, or more, than in any other locality in the Union. It becomes us then, to be more saving, and make the most of our resources. The value of peat ashes, compared with wood ashes, has not been ascertained—but peat abounds with us, and a cord of peat will yield more ashes than three cords of wood, if properly prepared and burnt.

The farmer whose practice has been referred to, has burnt peat toppings, imperfectly dried peat, stumps and sods, for the sake of the ashes, which have been mixed with his compost, and he thinks with decided good effects. When burnt in large heaps, there is a quantity of charcoal left, which, in the opinion of many competent judges, is the most valuable of all fertilizers, and as far as our observation goes, it has not been over estimated. It can be made with us as cheap as any where else. An acre of peat will produce four or five hundred cords of fuel; in our peat meadows, we have at our doors, mines more valuable than those of California. How rich and how happy would the farmers of our county be, if they would be content to use and enjoy the blessings Heaven has lavished upon them.

The committee will not extend their remarks, but the subject of composting manures deserves the attention of farmers, and is sure to reward them for all their efforts. There are many

other substances besides peat, which are valuable in the compost heap. Let every man improve the means he has, and there will be less occasion for dissatisfaction with our soil and climate, and less disposition for emigration.

DANIEL P. KING, *Chairman.*

COMPARATIVE VALUE OF CROPS, AS FOOD FOR CATTLE.

The committee last year (of which I was a member,) expressed some doubts as to the value of green corn stalks, as food for milch cows. This has led to careful observation, and some experiments on the subject.

In consequence of the dry weather, and increasing the number of my cows, the feed in my pasture was unusually short. About the middle of August, I commenced feeding with English hay, in addition to the feed of the pasture. I weighed the milk of four cows for three successive weeks. The first week they were all fed on hay. The second week, two were fed on hay, the other two, on green corn stalks. The third week, those that had previously been fed on hay, were fed on corn stalks, and those that had been fed on corn stalks, were fed on hay. The hay used, was cut early, and of superior quality. Some of the cows were more fond of hay than stalks, and others were more fond of stalks than hay. Having carefully observed the manner of their eating, (as I did not weigh their food,) and the weight of their milk, I came to the conclusion that they would produce about the same quantity of milk.

Now, if it is a fact, that hay and green corn stalks produce about the same quantity of milk, the question naturally arises, on which can they be kept the cheapest? If farmers commence feeding on their English hay, immediately after it is cut, and feed on it mostly through the fall, it would make a heavy draft on their hay, and I think in many cases, it would be exhausted, before pasturing time the next season. Corn can be easily cultivated, and will produce abundantly, and I think, may be fed on, cheaper than hay. Green second crop is very good to produce milk; but this, it will not do to rely upon, for it can be

produced only on land that is in a high state of cultivation, and on that to much extent, only in favorable seasons.

There is still another question which should be considered, which is, the kind of feed which has the best effect on the animal. If a certain kind of food will produce the same quantity of milk, and also tend, to some extent, to fatten the animal, it increases the value of that kind of food. Every thing considered, I know of nothing so good for food for milch cows in the latter part of summer and autumn as green corn stalks.

It is desirable, however, that further experiments may be tried, not only in summer and autumn, but winter feeding also, whether roots are the most profitable, and if so, what kind? if meal, what kind, and how used? whether in cut feed, or otherwise.

Another experiment has been tried by Daniel Merrill, 2d., of Methuen. The result, as he informed me, was in favor of the corn. The hay used was tolerably good, but not of superior quality. I believe the prevailing opinion in our vicinity, among those that have cultivated corn the most extensively, is in accordance with my own, and as I have stated.

Another subject on which the society has offered a liberal premium, is to ascertain the most suitable time for cutting hay. It would be rather difficult for a person to try an experiment which would be satisfactory to himself, much more to make a statement that would be satisfactory to others. There is so much difference in grass, that it is difficult to make a rule that will apply in all cases.

Heavy grass should be cut earlier than light. I think that herds grass, that is, a heavy burden and coarse, if it is to be fed to horses, should be cut when it is full in the blossom; if it is designed for cattle, especially for milch cows, it should be cut somewhat earlier. If it stands until out of the blossom, and the seed nearly full, it is hard; it has not that sweet smell, and if the cattle could speak, I think they would say, it has not that sweet taste that it has when cut early. I think the hay will be as heavy if cut when full in the blossom, as when it stands later. If the grass is fine, with a mixture of red top or fine clover, it will do to stand a little longer. Clover also, I

think should be cut when it is full in the blossom, and if it is heavy and badly lodged, it should be cut earlier.

The quality of the hay, I think, depends much on the weather previous to cutting, as well as the weather in the hay-ing season, and the manner of curing. A long wet season immediately preceding the cutting of the hay, injures its quality. Berries ripened in wet weather are not so sweet as when ripened in dry weather. Apples or peaches that grow in the shade, are not of so good flavor as those that grow in the sun. Grass cut when it is rather green, if a long wet season precedes, may not be as good as grass cut somewhat later, providing a considerable season of dry weather precedes cutting, and the difference may be owing to the weather, and not to being cut later in the season.

I think it is not uncommon for farmers on this, as well as on many other subjects in regard to farming, to embrace erroneous opinions, attributing certain results to some other than the true cause.

JOSEPH HOW, *Chairman.*

ON FRUIT TREES.

Many of our farmers have in former years, realized large returns from fruit orchards; even a few trees sometimes producing more profit to the owners, than all the other products of their farms. In later years, fruit orchards have become more numerous, and probably the returns from them have not been so large as formerly, from the fact, that the cultivation has been so much extended as to increase the supply to equal, or nearly equal the demand.

Now, but very few of the products of the soil are more remunerative than that of fruit trees; and in proportion to the labor required, after fruit orchards have reached a bearing state, we do not recollect of any branch of agriculture that pays so well, as a well cultivated orchard.

Amongst us, there is now more uncertainty of producing fair fruit, than formerly. The reasons why, are not in all cases ob-

vious ; and it may be well to offer inducements to careful, observing, intelligent fruit growers, to discover the causes and ascertain the remedies of imperfection in fruits.

Our attention has been called, this year, to the fact that apples, in considerable quantities have been transported from the interior of Maine, in some cases, from places many miles from railroad or water communication, to the city of Boston. These apples, we understand, have been taken at prices fully satisfactory to the grower ; and an instance has been communicated to us, in which the owner of an orchard has this year received more for his fruit, than he paid for the orchard a few years since.

Apple growers in more northern regions, have the advantage of us at present, in the fairness of their fruit ; this may not long continue ; as, with the extent of cultivation, the difficulties are apt to increase.

If we can ascertain the remedies for the various causes of imperfection in our fruits, we shall probably find our climate and soil as well adapted to the raising of most of the staple fruits in perfection, as any in this favored country ; and interest will induce us to furnish not only a sufficiency for our own community, but largely for exportation.

The committee were disappointed, in not having opportunity officially, to look over more of the orchards of Essex county ; but one orchard, that of Daniel Adams, of Newbury, being offered for examination, to whom they award the first premium on apple orchards.

This orchard the committee examined on the 26th of September, and were much gratified with its appearance. The arrangement was good ; the trees in a healthy and flourishing state, of vigorous growth, and were creditable to the cultivator, whose statement gives, in a somewhat particular manner, his treatment of the orchard throughout.

JOSIAH LITTLE, *Chairman.*

DANIEL ADAMS'S STATEMENT.

I offer for the society's premium, my apple orchard, set out since 1845, and containing two hundred and four trees, on about two acres. The land is a gravelly loam, and somewhat rocky, a small part mixed with clay, and inclining to the north-east, and has been improved as a field for some sixty years or more.

The field, previous to the year 1845, had been in grass about five years. In the spring of that year I broke up one acre, and manured in the hill, with about six cords of common barn-yard manure, and planted with corn, and obtained a fair crop.

In the spring of 1846, I spread upon the acre, about eight cords of coarse manure from the barn-yard and hog pen, and ploughed it very fine about the 10th of April, and immediately after set out seventy-six trees in rows, twenty feet apart each way, viz., forty-two Baldwins, eleven Hubbardston Nonsuch, eleven Danvers Winter Sweet, and twelve Rhode Island Greenings; most of them two years from the bud, and then planted with corn, except a row of potatoes on a line with the trees. In '47 and '48 the piece was planted with potatoes, and the present year with corn.

In 1847, I broke up the other acre and set out one hundred and ten Baldwins, two years from the bud, and twenty-two feet distant each way, manured in the hill, and planted with corn, except a row of potatoes by each row of trees, and in 1848 and 1849, with potatoes, with about eight cords of common manure to the acre, spread and ploughed in.

The present year I have set out eighteen trees, Baldwins, which completes the lot.

Every tree set out both years, lived and grew well. Many of them made more wood the first year, than those of the same age left in the nursery. I have lost seven trees since they were set, viz.: one by the oxen, four by the mice, one by the wood-chucks, and one by the ice, which have been replaced by other trees.

The success which I have had in the living and growth of my trees, I attribute very much to the manner in which they

were taken up and set out. Great care should be taken to keep every root as perfect as possible, when taken from the nursery, and before setting out, each tree should be turned up, and the end of every root of any size, be cut off with a sharp knife, at an angle of about forty-five degrees.

The land should be measured off, and a stake put down at the distance you intend they shall stand; and which, I think should not exceed twenty-five feet each way. The tree should be placed upon the ground and marked all round the roots, the hole dug just as deep as the tree stood in the nursery, (never I think, to exceed one-half inch deeper.) Then set the tree in its place, one man to hold it steady, one in the hole to place every root, the other with a shovel, to pulverize the dirt and sift it in among the roots, while the one in the hole, places with his fingers every root and little fibre, in their proper place; and so continue till the hole is full, and the setting is completed. Never tread the ground hard round the tree.

Setting forty to fifty trees is a good day's work for three men in easy land. I consider it all important that all trees should be set out right and with great care, and be taken care of after they are set out. The land should be manured and cultivated for years, or at least, until the trees come to a bearing state.

NEWBURY, *Sept.* 1849.

FRUITS.

There were seventy contributors of fruits, being one third more than at any former exhibition. The show of native grapes was fine, and the committee had a fine opportunity to test the merits of the several varieties. The "mammoth grape," of Mr. Carter, of Lowell, closely resembles a variety which we saw, six or eight years since, at the farm of the late Abel Nichols, in North Danvers. The berries were large, nearly round, and of a dark amber or light brown color, skin thick, and pulp firm. It was found to be in flavor inferior to the variety of Rev. G. B. Perry, of Bradford, and decidedly so in comparison with that of John Adams, of Newbury; the latter,

the committee consider the best variety in flavor, and the finest native Essex county grape, they have as yet seen. Although the best of the foxy flavored New England variety, it has that peculiar unpleasant flavor, in some degree, in this otherwise good grape.

There is an impression in the minds of many cultivators, that if we should transplant the native grapes into our gardens, and manure the soil, cultivating in the best manner, they would lose their foxy flavor and be meliorated in their character. The experiment of Professor Gimbrede, of West Point Academy, would seem to set this matter at rest, and to show, that in order to improve them, the seeds must be planted, and then possibly a new variety may be produced of good quality. This gentleman collected every known variety from the woods, manuring and pruning them with great care, in the hope of changing and ameliorating their character. The experiment was a failure; although the fruit was greatly increased in size, some berries being larger than the black Hamburg, yet the flavor and rough state of the fruit remained the same. The Isabella, which is the most generally cultivated grape for the open air in this quarter, notwithstanding its lateness and difficulty of ripening, and which matures finely in its native locality, the Carolinas, we have had under cultivation for thirty years, without perceiving the least change in its character, and we cannot account for the remarks of Dr. Underhill, of New York, who says that "it is every year becoming more delicious, containing *less pulp*," and that "when its character shall be *perfected by cultivation, as it will be*, there will be no grape in Europe equal to it." If the Isabella is thus changing its character in New York, is it not strange that no such change has been observed here?

The generous premium [fifty dollars] offered by our society, for a native grape which "shall ripen in our county, in the open air and in common exposures, from six to eight weeks earlier than the Isabella, and of *as good quality*," having produced so good a beginning as we observed at the hall to day, we trust that such a desideratum may yet be obtained.

JOHN M. IVES, *Chairman.*

ON FLOWERS.

Within the past few years, Horticultural Societies have been organized in several towns or cities of this Commonwealth, and have, at stated periods, had exhibitions of fruits and flowers. Many of the county agricultural societies have likewise made arrangements for exhibitions of a similar character, during the time of holding their annual fairs, at those places where the horticultural part of the exhibition is not under the direction of a society more especially devoted to these objects.

These exhibitions have been well sustained, and form a very important feature of these interesting festivals. The halls are always thronged with crowds of visitors, who are attracted thither by the display of the fine fruits and beautiful flowers, that are tastefully arranged on the stands and tables.

Much good has resulted from these shows,—a growing taste is rapidly spreading, and an increased attention is evidently given to the cultivation of these, the choicest of Flora's and Pomona's treasures, throughout our community, particularly in the vicinity of our large towns and cities. These latter places are undoubtedly the great centres, from which will radiate in all directions, whatever tends to exert an influence on society.

Your committee recommend that this society should encourage the diffusion of this taste, and should not cease their exertions, until every cottage in our county shall be surrounded with its parterre of beautiful flowers, and its gardens and orchards well stocked with the choicest fruit trees. This can be effected with trivial labor or expense on the part of the farmers,—a few days occupied by them in the spring, to put the grounds in a suitable condition, and a small expenditure for the seeds, plants, &c., are the only necessary outlay: the principal part of the labor afterwards, will be cheerfully borne by that portion of the family who are not occupied with the more laborious duties of the farm. This will not only tend to make home pleasant and agreeable,—thereby cultivating a more social feeling among the several members, but often can be made a source of profit. A few dollars and a little time spent

occasionally in this manner, will greatly enhance the value of the estate, and render the same more desirable to purchasers.

Every one, in selecting a place of residence in the country, would prefer to procure one that has a neatly arranged garden, with its patches of green, borders of flowers, clumps of shrubbery, shade trees,—and last, though not least, thrifty orchards—than of those neglected and cheerless spots, that too often greet us as we journey throughout the country.

This season, the Essex Institute omitted their annual exhibition of Fruits and Flowers, and directed their influence towards rendering the one held under the auspices of this society the more attractive and interesting.

The lovely flowers of spring,—the more fragrant and attractive ones of summer have passed and gone; and they are replaced by the more sombre, yet in some respects, more showy flowers of autumn,—these, with a few exceptions, are all that remain to grace our stands, and to decorate our tables at these annual exhibitions. Of these, the most conspicuous is the Dahlia. This flower, so infinite in its variety, is a great favorite with our gardeners and amateurs, on account of its furnishing in abundance at this season of the year, a long succession of blooms. Fine specimens were exhibited.

Francis Putnam, of Salem, exhibited many and choice varieties of those beautiful Roses, the Noisettes, Teas, China, Bourbons, and Hybrid Perpetuals. This last class of roses are perfectly hardy, and are obtained by hybridisation between the common June and China Roses. They are deserving of a more general cultivation, in consequence of being perpetual bloomers, and ornamenting the gardens with a continual succession of these favorite flowers, during the latter part of summer and autumn. Their appearance in the parterre contrasts strangely, though pleasingly, with the autumnal flowers; and is continually reminding us of the last roses of summer lingering in the lap of autumn.

HENRY WHEATLAND,

For the Committee on Flowers.

DOMESTIC MANUFACTURES.

Among the many ways in which genius manifests itself to the world, the converting of cheap materials, or such as would otherwise be thrown away as useless, into useful and ornamental articles, for household consumption, such as rugs, counterpanes and mats, is not the least praiseworthy. To fabricate a substantial and beautiful rug, calls into exercise not only the hands, but some of the higher faculties of the mind also. On such, we often see mapped out some of the distinguished traits in the character of the fair manufacturer, disclosing her taste, her appreciation and love of the beautiful, order and color; her patience, perseverance, and ideas of domestic economy.

A Hearth Rug should be in keeping with the quiet,—“the ineffable coziness of one’s own fireside.” Fighting dogs and cats, race horses at full speed, or other animals rampant, should never be seen pictured there. But the innocent lamb and other domestic animals, couched, or in attitudes expressive of peace, harmony or love. There also, may be represented flowers, buds, and the foliage of plants. But a correct taste should here, we think follow Nature, and never exhibit the magnificent pæony attached to a pumpkin-vine, or the peaceful dahlia, growing on a cabbage-stump. As a general rule, we should recommend the imitation of real flowers and leaves, instead of inventing such as Nature never produced. Let those who think they can improve on her models, try to change for the better the shape of a leaf—a leaf of any plant or tree whatever, by clipping it with scissors. The next most important study for artists, (and successful manufacturers of rugs are worthy to be ranked as such,) is the choice of a color for the back-ground, and the management of light and shade. The color of the back-ground should be such as will contrast well, and give relief to all the colors in the figures. And it should ever be remembered, that the sun never shines on the opposite sides of a tree, plant or blossom, at the same time; and no picture can possess much merit, in the shading of which this fact has been disregarded.

Governed in some measure by these views, the Committee

report that the show of rugs and braided mats was very superior. So numerous were the articles presented, and so many of nearly equal beauty and other valuable qualities, that they had much difficulty in deciding their respective claims to notice, the premiums offered, and gratuities merited.

ANDREW NICHOLS, *Chairman*.

MILCH COWS.

Seven Cows were entered for premium, and as many more for exhibition. The milk of all the cows entered for premium was sold as taken from them, only one having any definite statement of the quality of her milk. The cow of Horatio Bodge, of Danvers, gave an average of fourteen quarts per day, from June 1st to Sept, 27th. And from the milk was made, in one week, fourteen pounds eight ounces of butter. The committee were of opinion that she was more than ten years old; therefore, by the rules of the Society, she could not be entitled to a premium. Two others were excluded for the same reason.

Of the cows entered for exhibition only, were two fine looking animals belonging to Daniel Buxton, Jr., of Danvers. Their docile appearance, good form and color, and right proportions for milking qualities, particularly attracted the attention of the committee. There were no better looking animals of the kind in the pens.

After a careful examination of all the cows, entered for premiums, and of the statements accompanying them, the committee were of opinion that no statement in regard to the quantity and quality of the milk, came fully up to the rules of the Society, and that no one was entitled to the first premium.

They awarded the second premium of 9 dollars, to Wingate Merrill, of Danvers.

The third, of 8 dollars, to Enoch Page, of Danvers.

And the fourth, of 7 dollars, to Frederick Burnham, of Manchester.

DEAN ROBINSON, *Chairman*.

Wingate Merrill's Statement.

The cow I offer for premium, is eight or nine years old. I have owned her two and a half years. Her calf was killed the 13th day of June, when twenty four days old—was fat, and weighed 112 pounds, dressed.

I have kept an account of her milk, as follows:—from June 13th to July 13th, 30 days, 1,380 lbs. Average per day, 46 lbs.

From July 13th to Sept. 27th, 76 days, 3,040 lbs. Average per day, 40 lbs. She gives 39 lbs. a day, now.

Her feed has been common pasture, with three other cows. She has been milked between four and five o'clock, all summer, and has remained in the barn at night, with a foddering of hay. She has had no grain of any kind. I set the milk for butter one day, and made from it 2 lbs. 2 ozs.

DANVERS, Sept. 27th, 1849.

Enoch Page's Statement.

I offer for premium one native cow, 4 years old. Her milk, for the last twenty days, has weighed 738 lbs., making 13½ quarts per day. She had a calf the middle of July last.

DANVERS, Sept. 26, 1849.

Frederic Burnham's Statement.

The cow which I enter for premium, is seven years old, and has been owned by me over a year. She calved the 17th of March last, and will have her next calf the first of March next. She gives her milk till the time of calving. At the height of feed, for three weeks in June, she gave an average of 15½ quarts per day. Previously to that time, and since, her average yield has been thirteen quarts per day. Last year, I sold from her, besides what I used in the family, \$105 worth of milk, at 4 cents per quart, from May 20th to Nov. 20th; and at 5 cents the rest of the year. The calf I sold at \$5 25.

She has been pastured with another cow this season, in two fields, containing less than two acres, that have not been under plough for ten years. Excepting a fortnight's feed elsewhere, and a little fodder from the garden, this has been all her feed.

MANCHESTER, *Sept. 21, 1849.*

HEIFERS.

The number of heifers offered for premium is uncommonly large, being forty. The Committee (JOHN ALLEY, *3d. Chairman*,) award for heifers in milk, three months or more, first premium, \$7, to Hiram L. Roberts, of Beverly.

Hiram L. Robert's Statement.

The heifer that I offer for your inspection, was purchased by me in November, 1848, and was three years old in April following, and brought her first calf February 16th, 1849. Her feed, up to the time of her calving, was meadow hay only, after that, English hay. Her calf was sold when three weeks and three days old; she then gave eleven quarts of milk per day. She went to pasture May 19th, and had no hay afterwards, and was what good farmers would call, in very poor flesh. She was fed with one quart of corn meal per day, for seven successive days only, after being turned to pasture. The first fourteen days in June, she produced 15 pounds of butter, besides sufficient milk and cream for the use of a family of five persons. The third week in June, her milk measured 85 quarts, given in seven successive days, and produced 10 pounds of butter, churning from the cream. After that, time no correct account was kept of her milk or butter, until September 16th, when her milk was again measured for seven successive days. It measured 64 quarts, and produced $7\frac{1}{2}$ pounds of butter, once worked over and salted, her feed being a mowing field, that she had been in about two months, containing about $3\frac{1}{2}$ acres.

BEVERLY, *Sept. 26th, 1849.*

ON BULLS.

Twelve Bulls were entered for premium. There was no difference of opinion as to which should be given the *first* premium, but which was best entitled to the others, was a matter not so easily and readily to be determined; and in coming to the final result, the committee felt very far from entire confidence in the correctness of their judgment. When the merits of different claimants are very nearly balanced, the right or wrong decision of the question of superiority, is almost of necessity an accident, and in giving the preference to one, another must be passed by, which in some one point or more, may be his superior. After due deliberation, however, it was concluded that the yearling Bull of Henry Poor, of Andover, was entitled to the first premium of . . . \$7 00

The Bull of Samuel Thompson, of Haverhill, two years old, to the second, . . . 6 00

And the yearling North Devon Bull, of Joseph Kittedge, of Andover, to the third, . . . 5 00

Naturally, and intimately associated with our report, is the subject of "Improving the Breed of Cattle." A remark or two upon that subject may be neither uninteresting nor out of place. The importance of a more thorough knowledge, or clearer ideas upon it than we now have, is apparent to every body. In fact, no such thing as breeding stock, as an art, is known among us; and the man who has the credit of being a stock-raiser, generally gets it because he has a greater number of half-starved calves than his neighbors, and in whose stock there are as many varieties of shape and color, as there were in the stock of Jacob, when he separated from his father-in-law. Every imported bull, that happens to come in his neighborhood, no matter what his blood, nor what the blood of his cow—is crossed with his stock. Now, although crossing in any way is preferable to breeding in and in, yet this indiscriminate crossing will never, to any extent, improve our stock. If we get a good cow, it is the result of accident—mere chance. Experience so far, has shown, that importations from abroad, and the crossing with them, have in no way benefited our milch

cows. They may have furnished us better oxen in some respects ; but they have not as yet helped us to any more butter and cheese.

Your committee are of opinion, that the only successful mode of improving our stock, is by a judicious, systematic, enlightened attempt, which has for its basis, the native stock of the country. And it is only by an enlarged view of this, or any other matter connected with nature, that we can arrive at the truth. The advantage of crossing has been spoken of ; but let it be remembered, that if you expect good from it, you must bring together animals, *not nearly related*, but of the same breed. Nature is uniform in her operations. Wild animals of a particular breed, are generally of the same shape and color. Flowers resemble each other. But by man's intervention, the beast, the bird, the flower, are made to assume new colors and forms. If these changes are of value, they must be the result of sound judgment, enlarged views, enlightened experience, and a complete knowledge of the principles upon which nature operates.

Until these are attained, you may spend money, you may import stock, you may offer premiums, and no more benefit be derived from it, than has been from what has been done by this, and other societies for the last thirty years. We have no better cows now than we had then—we have no larger proportion of them,—and in our breeding, whether or not the calf which we raise, will make a good cow, or be good for nothing, is all mere chance.

The State Society have, with a zeal worthy of imitation, in most respects, made efforts to improve the stock of the country. But has that zeal been entirely according to knowledge? Can they put their finger on any point, and say, in this respect at least, we have made some progress? It may be that your committee have not full knowledge on this subject ; but we are satisfied, that if the stock “ which boasts of a long line of ancestry, of the purest and most approved breeds,” and is not tainted with a drop of “ ignoble blood,” is not more productive, so far as the dairy is concerned, than it is generally reported to be, it is better adapted to a royal, than a republican territory.

In conclusion, we hesitate not to say, that we have the elements of as good milch cows, as there are any where, and that if men, who have the means, will apply science and enlightened judgment to their development, instead of going abroad for cows, we can furnish better of our own, than can be found elsewhere in the wide world.

For the Committee,

T. E. PAYSON.

SALEM, Sept. 27, 1849.

Henry Poor's Statement.

I offer for premium a Bull, eighteen months old, weighing 1052 pounds. He is the third calf from a cow having produced a heifer, for which \$100 was offered when three years old. His origin is partly of the Vaughan stock, imported and scattered on the Kennebec River, many years since, which has been crossed partially by the Durham, mixing the two with the native breed, and producing the best stock driven to our market, as all dealers will attest.

He, probably, is more of the native than any other blood; hence, I call him the "New England," as being appropriate to his pedigree, and in harmony with my views of the value of Native American Stock.

He has been kept on ordinary pasture feed; his growth has been about twelve pounds a-week, as we have weighed him from time to time; but he has never been forced in his growth. During the season, he has served about twenty cows.

NORTH ANDOVER, Sept. 26, 1849.

ON THE STATE SOCIETY'S BULL.

The Committee, who had in charge the receiving and disposal of the Bull which the Massachusetts' Agricultural Society kindly offered to the Essex Society for their use, until such

time as they may order him to be returned, went to Lexington on the 18th of January last, and selected an Ayrshire Bull, a descendant of the imported stock, then in the care of Elias Phinney, and receipted for the same.

April 28th, he was taken to Danvers, where he remained until the first of June, and while there, he was put to eight cows. He was then taken to Andover, where he remained until the first of July, during which time, fourteen cows were put to him. He was then taken to Byfield, and is to be kept there during the winter. Sixteen cows were put to him in July and August, and eight since. The whole number of cows put to him during the season, was forty-six.

The cows put to the Bull have generally been of good quality,—a part were of extra quality,—a part have a mixture of late foreign importation, and one is described as being Durham, a great milker, belonging to Charles G. Loring, of Beverly.

The Bull is now nearly three years old, of medium size, fine dark red, with a mixture of white, a sprightly, active animal, from English stock, possessing more than ordinary milking properties, according to English publications. It is desirable that all his calves should be raised, especially the heifers, that a fair experiment may be made, to test fully the difference in the quality of the half blood cows, when compared with other milk stock, whether of late or early importation. (By early importation, we mean what is generally termed native stock.)

If all the heifer calves are raised—say from twenty to twenty-five—and compared with a like number raised under similar circumstances, and in the same vicinity, where no cross of late importation has been resorted to, may we not then be prepared to decide, in some good degree, whether we have improved upon the original stock imported at the settlement of the country, in the same ratio that the British breeders have done, who have, by various crosses, originated the variety known there as the Ayrshire?

Still, whatever may be the result of this experiment, it may be, that the Ayrshire is not the best foreign variety to cross with our present stock; and it is to be hoped, that like experiments that are now going on with the Ayrshire and the Devons, will

be made with the Irish Kersy and the Herefords. The short horns, or Durhams, have a mixture of their blood in the county, mostly from the bull Admiral, and, although he was imported many years ago, and kept, we believe, only at the farm of E. Hersey Derby, in Salem, yet even now, his descendants show size and points of fine form rarely to be met with and combined in other varieties ; and none will deny that some of them have proved first rate milkers.

MOSES NEWELL, *Chairman.*

ON FATTENING CATTLE AND SWINE.

Select the best formed cattle, from five to eight years old, of quiet disposition and good appetite, inclining to fatten. After the spring work is over, commence giving them the best pasturage during the summer, also the best fall feed until they come to the barn ; then feed them with good hay and Indian meal, at first from one to two quarts per day, gradually increasing till six or eight quarts are given, until they are slaughtered, or about fifteen bushels of meal to each animal. This process furnishes the largest weight, the best quality of beef, commanding the highest price in the market, and at the present prices, a profit to the owner.

Also, with respect to fattening swine—select those weighing about 100 pounds, which will cost about \$5 00 each, purchasing corn at the common rates. Keep them in a large, roomy yard, with a good supply of loam from the road-side, and muck from the swamp, giving them a dry room to lodge in. Feed them with three quarts of corn per day for one year. This will give 400 pounds of good pork, which has usually paid for all the corn and the first cost of the animal ; and what is taken from the yard, will pay well for all the labor which has been expended.

JEREMIAH COLMAN, *Chairman.*

DANVERS, Nov. 17, 1849.

DEAR SIR :—According to promise, I now send you the result of my experiment of keeping Swine, the past season, for the purpose of increasing the manure heap, which is as follows, viz :—

On the 13th of April last, I bought ten pigs, and on the 23d, five, making fifteen in all. Their average weight was 144 pounds, making 2,160 lbs., at 6 cents, . \$129 60

I fed them on dry corn and water principally ; occasionally I gave them shorts and water, and the waste from the house, which was a small item, as we make butter only for family use.

I gave them 220 bushels of corn, for which I paid, delivered, . \$130 00

And 30 bushels of shorts at 23 cts., 6 90

136 90

\$266 50

I sold them in September, for 7 cents per pound, the purchaser paying for killing. Commenced killing them on the 19th September, but owing to the warm weather, did not kill them all until the 17th of October. The fifteen weighed when dressed, 3,951 lbs., at 7 cts. per lb., . 276 57

Profit, \$ 10 07

Now for the manure heap. I fenced off a yard adjoining my barn, about eighteen by fifty feet, so constructed, that I could drive in at one end and out at the other with a team, and plough it, or cart in materials, as occasion required. I ploughed up the soil in the yard, and when the hogs had made it rich, and worked it up fine, I then covered the yard to the depth or ten or twelve inches, with meadow mud, or peat. When this was well incorporated with the soil and manure, and become soft, I spread over it a quantity of coarse stable manure, and when this became well mixed, added mud and manure, as be-

fore, until I used three cords of manure, for which I paid \$4 00 per cord.

I estimate the quantity of manure made, full one cord for each hog, say 15 cords, which is worth at least, \$4 50 per cord,	\$67 50
Credit three cords stable manure at \$4 00 per cord,	12 00
	<hr/>
	\$55 50
Profit on Pork,	10 07
	<hr/>
Making	\$65 57

which I get for feeding, interest on outlay, carting, material &c. I do not know of any way that I can obtain the same quantity of manure any cheaper than by the process above mentioned.

Yours respectfully,

LEWIS ALLEN.

To ALLEN W. DODGE, Esq.

ON COLTS.

Twenty-four Colts were entered for premium, from one to four years old.

Of all our domestic animals, the horse stands in the foremost rank. Although steam and railroads have lessened the necessity of his aid, they have not lessened his value in the market, or the pleasure which he still affords to those not so much bent on business and gold, as amusement and healthy exercise. Speed and activity are the qualities sought for now, in place of strength of body and limb, which are better fitted for the draft.

The horse is susceptible of the most perfect training, and can be made to know your wishes almost before they are expressed, and possessing great activity and strength, when properly encouraged, will use them to the utmost of his power. When in full health and plight, he will be as fond of moving forward as you are to have him do so. A little patience is much better than the whip. We once asked a horse dealer

how we should manage a contrary horse? "Never let him know but that he behaves just as you want to have him."

Horses are often made vicious in breaking, as it is called, and in training, when young, by bad management. In breaking colts into the harness, they should never know that they can break away. When convenient, the younger you begin with them the better. Accustom them gradually to the halter and harness. The halter should be so strong that they cannot break it when made fast to a substantial post. They will seldom try its strength more than once or twice; and the same with any part of a harness. If they find they can break a halter, it is seldom forgotten, and becomes a very vicious habit. After two years old, they may be placed by the side of a steady horse, and afterwards in a light carriage, followed up every day for some little length of time. In shoeing the first time, be sure you get a good strong smith, that will hold the foot as long as he wishes; not too long at first, lest he should be weary. Horses are not unfrequently very troublesome through life, by a fault in first shoeing.

The sign of a good road horse, and for speed, are a small, head, a short back, and flat legs. Something may be known by the countenance, which cannot well be described. A bright, full eye, wide nostrils, and a projecting, wide forehead, may be considered some of the signs of courage and long wind. The color of horses depends somewhat upon fancy; but bay, dapple-gray and black, are the most preferred in our country.

The three greatest and most common faults to which horses are liable, are stumbling, kicking, and shying. We know of no remedy for the first. The second may be avoided by using him to the harness about his haunches and head, when out of the carriage, and when he can do no mischief. Shying may be quite benefitted, if not cured, by stopping and moving slowly by the object, instead of urging the horse to breast it at once.

The Arabian breed of horses are attracting some attention in our county. They have not yet come to years, quite sufficient for use. They promise speed, courage, docility, and an exemption from most of the principal faults of road horses.

The growing of this kind of stock in our county is, at the present time, receiving great attention, if we may judge from the number at the show. We believe it to be as profitable as any other stock, as very few horses, at four years old, are worth less than from seventy-five to one hundred dollars. The demand and the value have not lessened, but rather increased, since the introduction of railroads.

Now let us bespeak for this noble animal kind treatment, good keeping, and light burdens. With such gentle usage, the horse will love and serve you faithfully for twenty-five, forty, and even fifty years. Do not maim or disfigure him, by the cruel practice of pricking, nicking, or even cutting off a single hair, which the Author of nature has furnished him with, for his special accommodation. And good taste will require, that in his natural garb and form, he actually shows the best, and is the most comfortable to himself. Curry and groom him every day, and give him a blanket and a warm stable in cold weather, and clean straw to lie on. Talk to, and with him, for he will soon understand your language, and manifest signs of recognition, or the tenor, at least, of your words. Horses like to be petted, and words of encouragement, we will again repeat, are better under all circumstances, than the whip.

R. A. MERRIAM, *Chairman.*

POULTRY.

The committee have examined the fowls which were entered for premium, and have awarded the following premiums and gratuities :—

To Eben Sutton, Salem, for the greatest and best variety of barn-yard fowls, premium, - - -	\$5 00
Thomas G. Dodge, Newburyport, fine Chinese, or Shanghai fowls, gratuity, - - - - -	2 00
True G. Morrill, Georgetown, best lot of Poland fowls, premium, - - - - -	2 00
E. B. Little, Haverhill, fine Chinese fowls, gratuity, - - -	1 00

Daniel Buxton, Jr., Danvers, Black Spanish hens, gratuity, - - - - -	\$1 00
Andrew Dodge, Wenham, variety of mixed breeds, gratuity, - - - - -	1 00
Stephen Osborn, Jr., Danvers, a large variety of fowls, gratuity, - - - - -	2 00
Hiram L. Roberts, Beverly, Malay and Chinese breeds, crossed, gratuity, - - - - -	1 50

The committee were much gratified by the exhibition of so large a variety, and such good specimens of the different breeds of fowls. Within a few years past, much attention has been paid to this subject throughout the county, and the improvement of the various breeds is beginning to assume the importance it deserves.

The domestic cock was formerly considered by ornithologists, to be a species of the pheasant; they now, however, separate it from that tribe, and make a distinct genus, under the name of *Gallus*, the Latin word for cock. Writers describe many varieties of the domestic fowl, but we shall confine our remarks to some of the well known breeds, and those which we think will be the most profitable for the farmer to keep.

The Malay Fowl.—In a valuable treatise on domestic fowls, by H. D. Richardson, published in Dublin, in 1849, the author says:—"The Malay fowl has, as its name implies, been brought, originally, from the peninsula of that name, at the southern point of the continent of India. He stands very high on his legs, is long necked, serpent-headed, and is in color, usually a dark brown, streaked with yellow, sometimes, however, white; his form and appearance are grand and striking in the extreme. This fowl is also, frequently called the *Chittagong*. The Malay fowl that were originally imported, were by no means, such birds as I could recommend to the notice of the breeder, their size possessing too much offal, as neck, legs, and thighs, and the flesh, moreover, being dark colored and oily. Another variety, that has been since introduced, is well worthy of attention. As a cross, this Malay has indeed proved a most valuable addition to our poultry-yard, the cross-breed possessing

all the hardness of our native domestic fowl, with the gigantic size of the foreign stock."

The Spanish Fowl.—This fowl is frequently, but erroneously, called the Italian fowl. Mr. Richardson says:—"I regard these birds as the result of the highest possible *artificial* culture, and adduce, in support of my opinion, their unusually large comb and wattles, characteristics not commonly to be met with among primitive varieties. The color of the Spanish fowl is black, and the feathers of the legs, thighs and belly, are particularly decided in their hue, and of a *velvety* aspect. One of the most striking characteristics of this fowl, is a *white check*, and the comb and wattles are singularly large, simple, and of a very high color; the feet and legs are of a leaden color, except the soles of the feet, which are of a dirty flesh hue. This is a fowl well deserving the attention of the breeder. As table birds, they hold a place in the very first rank, their flesh being particularly white, tender and juicy. The hens are likewise layers of the first order."

The Dorking Fowl.—In his article on this fowl, Mr. Richardson says:—

"The Dorking would appear to owe its name to its having been chiefly bred in a town of Surry, of the same appellation. That the peculiarity of *five* toes, or in other words, two hind toes instead of one, is to be regarded as a distinctive character, is by some writers questioned, and by others wholly denied. For my part, I should say, whenever this characteristic is absent, a *cross* has been at work. The color of the Dorking is generally pure white, spotted or spangled with black; these colors will sometimes merge into a gray, or grizzle. These birds have been long prized, and it is now many years since their superiority over our ordinary domestic varieties was originally discovered and appreciated."

The author of an article (which appeared in April, 1849, in that excellent periodical, the Albany Cultivator,) on "the Dorking fowl," says of the fifth toe:—"The writer has, in several instances, seen it in the Polish and the Bantam breeds. There is no doubt that it is a mere freak of nature, similar to

the production of an extra finger or toe in some families of the human race."

Our own opinion is, that the fifth toe may be considered a distinctive mark of the Dorking. This fowl is well known in our vicinity, and several gentlemen (among others, Charles G. Loring, of Beverly, Allen W. Dodge, of Hamilton, R. P. Waters, of Beverly, and John H. Brookhouse, of Salem,) have found this breed excellent layers, and good fowls in all respects.

The Polish Fowl.—Mr. Richardson speaks of three sub-varieties of the Polish fowl.

1st. The Spangled Polish, "a bird of extraordinary beauty, and extremely scarce."

2d. The black fowl, with a white tuft on the crown.

3d. A variety, which he says, "is the most pure and unmixed of the three. Its color is a brilliant white, with a jet-black top-knot. I have never myself, seen a specimen of the breed, and have every reason to suppose it extinct, or nearly so."

The second variety, the black fowl with a white tuft on the crown, is well known to farmers, and is justly considered a valuable breed. These fowls are excellent layers, and seldom incline to sit; in order, however, to insure their laying well in winter, they must be kept warm. The chickens, when young, are delicate, and much affected by changes of the weather. Mr. Richardson speaks of "these birds as having been brought from St. Jago by the Spaniards, to whom they owe their first introduction into Europe. Their color is a shining black, and both cock and hen have the white top-knot."

The Cochín China Fowl.—Of this fowl, Mr. Richardson says:—

"This gigantic bird has been only very recently introduced into Great Britain, and it is to that royal patroness of poultry fanciers, the nature-loving Victoria, that we owe its addition to our stock of domestic fowls. This variety of fowl so far surpasses, both in size and power, all that we have ever yet seen in the shape of poultry, as to have led many persons not conversant with zoology, on first viewing them, to refer them to

the family of *Bustards*. They are, however, genuine poultry. Their general color is rich, glossy brown, deep bay ; on the breast is a marking of a blackish color, and of the shape of a horse-shoe ; the comb is of a medium size, serrated, but not deeply so, and the wattles are double. Besides their gigantic size, however, these fowl possess other distinctive characteristics, among which I may mention, as the most striking, that the wing is jointed, so that the posterior half, can, at pleasure, be doubled up, and brought forward between the anterior half and the body. The birds can do this at pleasure, and the appearance the manœuvre imparts to their form, has procured for them the title of Ostrich Fowl. The flesh is white and delicate. The eggs laid by the hen of this variety are large, of a chocolate color, and possess a very delicate flavor. They are very prolific."

In an article on the "Kulm or Malay Fowl," in the *Albany Cultivator* of February, 1849, we find the following remarks :—

"The celebrated Cochin China Fowls, kept in Queen Victoria's Aviary, are regarded by Martin, as only a sub-variety of the great Malay. Valuable stocks have originated, from crossing different branches of the Malay with other breeds. Dickson thinks it is very probable, that the Dorking originated by a cross between the Malay and the Game-fowl. A writer in the *Scottish Quarterly Journal of Agriculture*, is of the same opinion. The Jersey blue indicates a similar mixture."

Chinese Fowls.—The Chinese fowls with which we have been familiar, differ in appearance from the Cochin China fowls above described, although in size and color, there are some points of resemblance. The original stock was imported from Canton some years since. Of these fowls, we can speak with confidence. They lay well throughout the year, their eggs being of a buff or nankin color ; their flesh is good ; they are peaceable in their dispositions, hardy, and easily raised ; their wings are so small in proportion to their bodies, that they are unable to fly over fences. And, in this connexion we would observe, that, if this breed is kept, the first perch should be, at the extent, not more than two feet above the floor of the hen-house.

The Dung-hill Fowl.—"The Dung-hill Fowl," Mr. Richardson says, "occupies in the poultry-yard precisely the position of the cur-dog in the kennel, being in fact, the produce of a miscellaneous intermixture of most of the ordinary domestic varieties, and constantly differing in its appearance, with the accidents which may have influenced its parentage."

Mr. Richardson is probably correct in the rank he assigns to the Dung-hill fowl, but still it is not improbable that this breed, which may be called the native stock of our country, might, if the same attention were bestowed upon it, by judicious crossing, become equal to any of the above described kinds.

Many varieties of fowls, besides those above mentioned, are described in works on poultry; and some of them may be valuable,—perhaps as much so, as any of which we have spoken,—but the committee think that their duty will be better performed, by confining their remarks to breeds which have been proved to be good. Of the above described varieties, they would particularly recommend the Spanish, Dorking, Chinese, and Polish. The Malay, too, crossed with the Dorking, might produce a valuable breed; and the Chinese, crossed with the Dorking, Spanish, or Polish, would, perhaps, prove still more valuable. The committee cannot condemn in too strong language, the practice of breeding in and in; if this course is pursued, the best stock will soon degenerate.

Selection of Stock. For the choice of a cock, Mr. Richardson gives the following directions:—He "should be *in perfect health*, feathers close and rather short, chest compact and firm, full in the girth, lofty and elastic gait, large and firm thigh, beak short, and thick at its insertion. Next to health and strength, age is to be duly considered. Neither select a cock that is too old, nor one that is too young; let the age be from a year and a half, to three and a half. Some cocks retain their vigor till they are even past six years old."

The proportion of cocks to hens must depend upon the object we have in view.

Mr. Richardson says:—"If you look for profit to the production of eggs alone, I should say that one cock, if a stout, young, and lively bird, may have as many as twenty-four hens. If,

however, you want to obtain strong and thriving chickens, you must restrict him to six, or, at most, eight. If your object be the improvement of a worn out or degenerate breed, the fewer hens you allow to one cock, the better ; and you should not, at any rate, allow him more than three."

In selecting eggs for setting, we take such as are not misshapen nor small ; the number to be used, depends upon the size of the hen.

Manner of Feeding. The following method will be found a good one :—Once a day, in summer, feed on a mixture of corn and barley, or corn and oats. This will be sufficient, if your fowls have a large enclosure, where they can obtain gravel, insects, worms, and green food ; if they are confined to a small space, these substances must be supplied them liberally. In winter, keep corn, mixed sometimes with barley, and sometimes with oats, constantly before them, as well as pounded oyster shells, burnt bones, or clam shells ; occasionally, give boiled potatoes, mashed, and mixed with Indian meal, or bran,—warm, but not hot. Let them have wood ashes, to dust themselves in, and an abundance of clean water, fresh every day ; in freezing weather, the water should be lukewarm. Chickens require no food, for the first twenty-four hours after they are hatched ; we have, however, been in the habit of giving them water, in about twelve hours from the time they leave the shell. After the first twenty-four hours, for the two succeeding months, give cracked corn, dry, three or four times a day ; occasionally vary their food, by giving sometimes cooked meat, chopped fine, and sometimes crumbs of bread. We think dry food much better for young chickens, than dough, or any substance mixed with water. An abundance of clean water should be constantly before them.

Mr. Richardson says, that "it will not answer, to feed fowls wholly upon *any one variety of food* ; neither will it be found advisable to feed upon any one *class* of food. Fowls require a mixture of *green* food with *hard* food, fully as much as horses or cattle do. When the birds have the advantage of an extensive walk ; they will find this for themselves ; when they do not possess such an advantage, you must provide green food for

them. Fowl of all kinds require *sand*, or *gravel*, as an aid to digestion; being, in fact, necessary to promote a medium of *trituration* in the gizzard, as well as to supply calcareous matter for their egg-shells."

We copy from the Albany Cultivator, of August last, the following article on "Keeping Hens."

"Mr. J. M. Mason, of Orwel, Vermont, usually winters two hundred hens. His practice is, to buy pullets, in the month of November. He buys those which were hatched early, as such are the best to lay in winter. They cost about twelve and a half cents each. They are fed, in a great degree, on *mutton*. Mr. M. buys sheep, in the fall, at low prices,—about what their pelts and tallow are worth. The carcasses are boiled, the tallow saved, and the flesh and bones, after being allowed to freeze, are kept till spring,—a suitable portion being fed to the hens daily. They are allowed, in addition to the meat, a little corn, oats, or buckwheat. They lay well through the winter,—comfortable quarters being provided for them,—and continue to produce eggs in abundance, till June. It is found most profitable to sell the whole stock at this period, as they are generally fat, and will bring from twenty to twenty-five cents apiece. If kept through the summer, they lay but little in the warm months, the eggs will keep but a short time, the fowls grow poor in moulting, and if kept another year, will not lay as well as young ones. Mr. M. keeps hens only, (no cocks,) and is inclined to think he obtains as many eggs, and that they keep better, when not impregnated. As to varieties, he has tried several, and thinks the *top-knots* will generally lay rather more eggs, the first season; but their carcasses are of less value than most other kinds."

Hen-House. The hen-house should be dry, airy, and light, and, if possible, have a southern exposure, with glass windows, to admit the sun in cold weather; it should be frequently and thoroughly cleaned out. It should be lathed and plastered, for hens must be kept warm in winter, in order to ensure their laying well. Some persons, in the coldest weather, keep a little fire in the coop, which is a good plan.

There should be two distinct apartments,—one for laying,

and one for roosting,—and these should be separated by a partition, having an opening, with a sliding door, for the fowls to pass through.

It is best to have the coop entirely above ground ; one under ground is warmer in winter, and cooler in summer, but is always damp ; and we are satisfied, that hens thrive best, and lay best, in a perfectly dry atmosphere. It is rarely the case, that hens lay during the season of moulting ; and, as this does not take place until the second year, young fowls may be relied upon for laying, while the older ones are moulting.

In most of the hen-houses we have seen, neither the roosting nor the laying apartments have been large enough, and the laying ones have not contained a sufficient number of nests. Frequent whitewashing of the coop, the roosts, and the boards enclosing the nests, will be found useful, particularly in the spring of the year, after the hens have been setting.

Diseases of Poultry. Little attention has, as yet, been paid to the treatment of the diseases of poultry, owing to the fact, that the death of a fowl or two is not usually of much consequence. The books on poultry, however, prescribe remedies for various complaints to which fowls are subject. We think, that most of their diseases arise from neglecting to keep the coops clean, from not giving them fresh, clean water, and from not feeding them properly. Judiciously managed, they are healthy, and subject to few diseases. When a fowl is sick, we separate it from the rest of the flock, and if there seems to be no chance of recovery, we kill it, and put an end to its sufferings.

Profits of Poultry. The committee have no hesitation in expressing it as their opinion, that fowls, with proper management, may be a source of profit to the farmer. The care of them will afford amusement, and the observation of their habits furnish instruction to his children.

Our remarks are already extended to such a length, that we have only space to allude to the interesting meeting of "The New England Convention of Fowl Breeders," which was held in Boston, on the 15th, 16th, and 17th days of November, 1849.

The originators of this novel and interesting exhibition deserve the thanks of the community, for a beautiful show of the various kinds of fowls. The public, generally, were surprised at the variety of birds exhibited, and the manifest improvement which has, within a few years past, taken place in their breeding. We trust that there will be a similar exhibition, the next, and each succeeding year; it awakens and keeps alive an interest in the subject, stimulates a laudable ambition, and produces a competition, which will be productive of highly beneficial results.

In conclusion, the committee beg leave again to express their gratification, at the fine exhibition of poultry, at the meeting of the society, this year, and to hope that, in future, a still deeper interest may be manifested in the subject. The study of animated nature is one of intense interest, to an inquiring mind; and although the rearing of a few hens and chickens may, to some persons, seem a trifling occupation, yet when it is considered that, in the United States, more than twelve millions of dollars are invested in poultry alone, the subject assumes an importance, deserving the attention of the whole agricultural community.

JOHN PICKERING, *Chairman.*

ON ESSAYS.

The committee have received but two. Notice of two others was given to the Secretary, but they did not come to hand in season to be examined. Those received, relate to *maize*, or *Indian Corn*; one to its origin and history, the other to its culture. Unlike entirely in character, both have been perused with interest. In our opinion, both will be found worthy of publication; and the payment of the premium of *ten dollars*, to each of the authors, is recommended.

The essay on the origin and history of maize, is prepared with much care and ability, and presents a well digested argument in favor of the American origin of this plant. We read this paper with astonishment and delight. The authorities

named, are not all at our command, but if they are correctly cited, (and there is no reason to suppose they are not,) it is not easy to see how the conclusion to which the author has arrived, can be controverted. It must be gratifying to every true American, to know that our own land is justly entitled to the honor of originating this plant. While other lands may boast of their products of *tea* and *coffee*, of universal use, our own can claim *corn* and *potatoes*, of name more humble, but of character not less valuable.

The essay on the culture of this plant, appears to be the production of the hard hands themselves, that conducted the cultivation ; putting forth the suggestions as they sprung from the soil, when following the plough, or wielding the hoe, uncontaminated by any influences of the press. We cordially greet such suggestions. The diversity in the character and style of the papers, has increased the interest in their examination.

After the day of grace had gone by, an offer was made, of an essay on "Root Crops." But the trustees, upon deliberation, determined not to be tempted into a deviation from the rule prescribed. Possibly, what is lost in one form, may be made up in another. The subject is one on which much can be advantageously said. The comparative value of these crops is but imperfectly understood. Many raise them, without distinct ideas of their use. If farmers would carefully observe their effects on the soils in which they are grown, as well as on the animals to which they are fed, and give an account of their observation, they would instruct themselves, and do a good service to their neighbors.

It is gratifying to know, that the plan of rewarding well written essays has found favor with several of our sister societies. If persevered in for a few years, we have confidence to believe, it will be the means of eliciting and condensing much valuable information.

J. W. PROCTOR, }
D. P. KING, } Committee.

AN ESSAY ON THE HISTORY AND IMPORTANCE OF THE INDIAN
CORN, AS AN AGRICULTURAL PRODUCT.

BY CHARLES LOUIS FLINT.

The complete history of Indian corn seems never to have been written by an American. The materials for it must be sought in old and uninviting volumes, in the narratives of voyages and travels, and in no less than five or six different languages. The skilful labor required to bring together the various and often conflicting accounts, is by no means small. The writer who would undertake such a task, should possess much knowledge of the botany of the western continent, as well as that of Asia and the Asiatic isles, to be able to draw the most natural and correct conclusions of his own. He who shall do it, as it should be done, will render a great service to American agriculture.

In France, Parmentier published a work on maize in 1785. This was soon followed by that of Harasti, in Italy, devoted to the practical details of the subject, in 1788. In Germany, Burger published a work on the Natural History and Culture of Maize, in 1809. Still more recently, the labors of Bonafous, in France, have thrown much light and interest upon the same subject. In Spain, though no very valuable work has appeared on the history of maize, such frequent allusions are made to it in the narratives of the voyages of Columbus, Alonzo Negro, Penzon, Vespucci, and Cortez, as to be of great service in determining its native country. The works of Oviedo and Hernandez, also, are worthy of mention. Still more important is the authority of Humboldt.

The word *zea*, which is applied to maize, is derived from a Greek word, which signifies *to live*; and the reason of its application, is the great amount of nutritive matter which the plant contains. Of all the species of Gramina, the *zea mais* is probably the most cultivated. It is annual, and the stems, which are cylindrical and closed at the nodes, rise to the height of from four to ten feet. The sheaths of the leaves are split, the flowers are in double rowed imbricated bracts, the male

flower being placed at the apex of the stem. Each grain is furnished with a style, which extends along the inner side of the sheaths, and hangs like a fine silken thread, forming the tassel. The stamens are three; the seeds are rounded on the surface, compressed at the sides, and arranged in rows. They are extremely farinaceous, or mealy, which gives the plant its value. The varieties are innumerable. These varieties are owing, in part, to difference of culture, climate and soil. Of these we shall speak more at length hereafter.

Naturalists have long disputed the origin of maize. The question is one of interest, inasmuch as some claim our own as its native country, while others contend that it came from the East. It is proper to state, briefly, the argument as it stands, after which, we shall be better able to draw somewhat satisfactory conclusions.

Bock, the first botanist who wrote of it, forty years after the discovery of America, asserts that it came from Arabia, and was called *wheat of Asia*, (blè d'Asia,) *great wheat* and *great reed*.* But four years after, the same opinion is maintained by Ruellius,† whose assertions are, perhaps, worthy of respect. Fuchsius‡ also declares, that it came from Asia to Greece, thence to Germany, and was called *wheat of Turkey*, because the Turks at that time possessed all Asia. Many writers have taken the authority of the old map, or chart of Incisa, of the thirteenth century, to prove that it came from the East. Of such, we may mention Sismondi,§ M. Michaud,|| Gregory,¶ Lonicer,** Amoreux,†† and Reynier,‡‡ who was familiar with the history of agriculture. This chart describes a grain of a golden color, and partly white;—"granis de colore aureo, et partim albo,"—under the name of *meliga*. Crescenzo describes the method of cultivating this grain, which is very nearly the same as that

* Hist. Nat. du Mais, p. 11, par M. Bonafous.

† De Natura Stirpium, Lib. xi., c. xxix., p. 428, 1536.

‡ De Historia Stirpium, pp. 824-25. 1542.

§ Biographie Universelle, Tom. xxix., p. 542. Note.

|| Histoire des Croisades, 4th ed., Paris: 1826. Tom. iii., pp. 348-9.

¶ Annales de l'Agriculture Française.

** Naturalis Historiæ opus novum. Frankfort: 1551.

†† Memoire sur le Mais. 1784.

‡‡ Feuille d'Agriculture du Canton de Vaud. T. vii.

of cultivating maize at the present day. The Portuguese writer, Sata Roza de Viterbo, also, asserts, that it was known in the thirteenth century.* Whatever may be said of its origin, it seems to have been first introduced into Turkey, from whence it made its way to the West. This is shown by the names which have been given to it in Europe, several of them indicating that it came through Turkey. But according to some Spanish authors, it was brought into Spain by the Arabs.† A Chinese writer of the middle of the sixteenth century, draws the figure of the maize as known in China, which is said to correspond with some species of maize now known. Some travellers who have visited the Asiatic Isles, have inferred that it was cultivated about the equator, in that vicinity, from great antiquity, and that it passed from these isles into China, and thence to the interior about the Himalaya. John Crawford, who lived for years in the island of Java, says :—"Maize is, next to rice, the most important agricultural product among the great tribes of the Indian Archipelago." Mr. Rifaud asserts, that some kernels were found in the sarcophagus of a mummy in Thebes, in 1819. The well known orientalist, D'Herbelot, mentions‡ a passage of Mirkond, a Persian historian, which might lead us to suppose, that maize was known to the old world, long before the discovery of the new.

Now the question arises, whether the meliga described in the old chart of Incisa alluded to, was identical with the zea mais? Bonafous says, on this point, that the description of the meliga from the East, corresponds to maize, but that according to the learned author of the *Flore d'Egypte*, in the description published by order of Napoleon, it can equally well be applied to the millet of India, in which the grains pass in some of the varieties, from yellow to white. But Cardan says,§ distinctly, that maize strongly resembles the plant known in Italy as melica, or *sorghum*, which is the meliga of Incisa. So of several other authorities, as Matthioli and Georges de Turre.

* Bonafous Hist. du Mais.

† Valcarcel, Agricultura General y gobierno de la casa del campo. Valencia : 1768.

‡ Bibliothèque Orientale. 1778. Tom. iii., p. 137.

§ De Subtilitate. Lib. xxi., p. 389. Basil, 1663.

Moreover, Bonafous himself declares that it is evident, to look at it, that the meliga is a real maize, and he is, therefore, inclined to believe, that it was known in Asia and Europe before the discovery of America.

After this accumulation of evidence in favor of its eastern origin, it is worthy of remark, that some have even asserted, that it was known to the ancient Greeks and Romans. But such conjectures, as that the black millet brought from India to Italy in the time of Pliny,* was the maize, are probably ill-founded. Even Mr. St. John, whose great familiarity with the domestic affairs of ancient Greece, entitles him to the highest respect, says : †—"In the region beyond Bactria, a species of corn was found, which must unquestionably have been maize, since the grains are said to have been as large as olive stones, and to maize alone, can we apply Herodotus' description ‡ of the wheat found in Babylonia, the straw of which, was encircled by leaves four inches in diameter, and its return from two to three hundred fold. Now, in wheat, I believe so prodigious an increase is all but impossible ; whereas, a still greater return might be obtained from the Indian corn." And there have not been wanting those who think that Homer distinctly mentions maize, § as well as the naturalist, Theophrastus, in his history of plants ; || and allusions are frequently made in the Bible, ¶ to a grain that could have been no other than maize or Indian corn. Such was the opinion of William Cobbett.** It arose, however, from utter ignorance of the ancient mode of planting or sowing wheat, which will be alluded to hereafter.

It is now proper to enumerate, briefly, the authorities on the

* Pliny *Naturalis Historia*. Lib. xvii., c. 7.

† *History of the Manners and Customs of Ancient Greece*. Tom. iii., pp. 406-7. London : 1842.

‡ Herodotus. Lib. i., § 193, p. 80, of Wheeler's Ed. Boston : 1842.

§ *Od. Lib. iv.* ; verses 41, and 604.

|| *Theop. Historia Plantarum*. Lib. viii., c. 4. It should be noticed, that his description is very general. Speaking of eight kinds of wheat which had been imported into Greece from Asia, he says, that one of these varieties was heavier than the rest. May not this have been the variety to which Herodotus alludes, and the same as that which Mr. St. John says was called Camel's tooth ?

¶ *2d Kings iv.*, 42. *Job xxiv.*, 24. *Leviticus ii.*, 14, and *xxiii.*, 14. *Deut. xxiii.*, 24 and 25. *Gen. xli.*, 5. *Matt. xii.*, 1. *Ruth ii.*, 14, and *Sam. xvii.*, 28.

** See also Hooker, *Jour. of Botany, (Classical Plants of Sicily,)* 1834. p. 219.

other side of this question; those who believe maize to be indigenous to America, and that the New World should have the credit of having given it to the Old. And here, it may be, we shall find naturalists not less celebrated than those already mentioned. Among the first, in point of time, is Dodonaeus,* who lived in the middle of the sixteenth century, and wrote but shortly after Bock and Fuchsius. After him came Camerarius,† then Matthioli, one of the most learned and justly celebrated men of his time. He affirms‡ that Turkish wheat, (*blé turc*) is not a proper name for maize; that "it should be called Indian wheat, (*blé d'Inde*) and not Turkish wheat, because it came from the West Indies, and not from Asia nor from Turkey, as Fuchsius believes." So Ray § and others, say that Fuchsius was mistaken, and that it came from the New World. M. Dumeril thinks it was called Turkey wheat, in consequence of its long stalks. So the authority of Heynius is to the same effect. *Turcici nomen non ex vulgo accepit, quod ex Turcorum terris exportatum fuit, verum ab aristarum similitudine aliqua cum crista seu pluma in apice Turcorum capitibus imposita.*

Gerarde, after describing several kinds of "Turkey wheat,"|| which were evidently species of maize, goes on to say:—"These kinds of grain were first brought into Spain, and then into the other provinces of Europe, not (as some suppose) out

* *Stirpium Historiæ Pemptades*. Antwerp: 1583.

† *Hortus medicus et philosophicus*. Frankfurt: 1568.

‡ *I Discorsi mei sei libri di Dioscoride*. 1645. Described also in the *Commentarii in lib. primum Dioscoridis*, p. 319. 1598.

§ *Historia Plantarum*. London: 1686.

|| *Herball or Generale Histoire de Plantes*, p. 82, London: 1633. This curious old work contains plates of the different species of maize then known, as well as the millet and the sorghum, with which the maize was often confounded. The plates show a very marked difference. It is amusing to see how little the true qualities of maize were known at this time in England. "Turkey wheat," he says, "doth nourish far less than either wheat, rye, barley, or oats. The bread which is made thereof, is meanly white without bran; it is hard and dry as bisket is, and hath in it no claminess at all; for which cause, it is hard of digestion, and yieldeth to the body little or no nourishment; it slowly descendeth and bindeth, as that doth which is made of Millit or Panick." We have as yet, no certain proof or experience concerning the virtues of this kind of corn; although the barbarous Indians, which know no better, are constrained to make a virtue of necessity, and think it a good food: whereas, we may easily judge that it nourisheth but little, and is of hard and evil digestion, a more convenient food for swine than for men!

of Asia Minor, which is the Turk's dominions, but out of America and the Islands adjoining, as out of Florida and Virginia, or Noremberga, where they used to sow, or to set it, and to make bread of it, where it groweth much higher than in other countries." He also takes care to say, that it was not known to the ancient Greek and Latin authors. M. Parmentier is of opinion that it had American origin.

M. E. Discourtilz also says, maize was introduced into Europe by the Spaniards, who brought it from Peru.* It is important to mention, also, the authority of Thomas Nuttall,† who thinks it was indigenous to tropical America. The same conviction is expressed by the learned Mrs. Somerville.‡

It remains to speak of the important conclusions of Baron Humboldt. "It is no longer doubted," says this learned naturalist, in his Essay on New Spain, "it is no longer doubted among botanists, that maize, or Turkey corn, is a true American grain, and that the old continent received it from the new." Again, he says:—"On the discovery of America by the Europeans, the *zea* maize (*tlaoalli* in the Aztec language, *makiz* in the Haitian,) was cultivated from the most southern part of Chili to Pennsylvania." Massachusetts, he might have said, for such was the case. "According to a tradition of the Aztec people, the Toultecs in the seventh century of our era, were the first who introduced into Mexico the cultivation of maize, cotton, and pimento. It might happen, however, that these different branches of agriculture existed before the Toultecs, and that this nation, the great civilization of which has been celebrated by the historians, merely extended them successfully. Hernandez informs us, that the Otamites even, who were only a wandering and barbarous people, planted maize." Thus, we see it was cultivated in America, long before the discovery, and formed a most important article of food for centuries.

Having candidly stated the various authorities on this question, we are now prepared to proceed in our investigation.

* Flore Pittoresque et Medicale des Antilles Paris : 1829.

† Nuttall's Works, vol. 1, p. 203.

‡ Physical Geography, p. 274.

And first, let us say, that though we should consider it no small gift of the New World to the Old, it is not difficult, on a question which does not affect either personal or national honor, to free our minds from prejudice and partiality, and study with a desire to ascertain and establish the truth. We are not convinced by the assertions of some, or by the arguments of Bonafous and others, to prove that maize originated in the east. They have not made out a satisfactory case. It should be borne in mind, that the authority of the early writers is not always to be relied upon. They possessed none of the advantages which modern science has laid open, to pursue their investigations. They could not be accurate on questions of this nature. It is very probable that maize came into Europe by way of Turkey and the Levant, which gave it the name which it then bore, of Turkish wheat, &c., and which would be likely to deceive a naturalist of the sixteenth century, in regard to its origin. Then, it is very easy to conceive, how a careless statement made by a writer three hundred years ago, would be taken on his authority, and thus gain a credit which it did not deserve. Instances of this occur on almost every page of the old historical writers, as any one who is at all familiar with the works of Sir Thomas More and the old chroniclers, can testify.

It is a remarkable fact, that maize is not mentioned by travellers who visited Asia and Africa before the discovery of America. These travellers to foreign parts, were often very minute in their descriptions of the productions of the soil. But the maize was never described in Europe until after the discovery. This, most certainly argues very strongly, that it was not known.

It is also a remarkable fact, that it was universally cultivated on the western continent at the time when the Europeans landed here. This is proved by P. Martyr,* Ercilla,† Jean de Lery,‡ not to mention Torquemada§ and others, who tell us

* De Orbe novo decades. III., 1516.

† Alonso de Ercilla, Araucana, Madrid: 1577.

‡ Historia d'un voyage fait en la terre du Brésil, 1723.

§ Della Monarquia Indiana Tom. I., p. 158.

that the first Europeans who set foot on the New World, saw, among other wonders, a gigantic wheat with long stalks, and that this wonderful wheat was the maize. The harvesting of it was celebrated by the people with religious festivals. Sacrifices were prepared with it. With it the Mexicans formed idols. It constituted almost the only food for all the tribes in Mexico, in Peru, in Brazil, at the Orinoco and the Antilles. It served for money. A theft of seven ears, the Mexican laws punished with death.

It is a still more curious fact, that immediately after its introduction into Europe, it spread with great rapidity into every country and province where the climate was thought to be suited to it. Now, if it had been known in Asia, if it had been cultivated by the Turks, how could all these things have happened? Why was not so useful a grain introduced into Europe before, or why did it spread so rapidly when it was introduced? A somewhat extensive trade was carried on between Europe and some of the Asiatic Isles, long before the sixteenth century, so that, if Indian corn had been known or cultivated in Asia, there is every probability that it would have found its way into Europe. The plant called *sorghum*, was known and cultivated in Europe, and somewhat in Asia and Africa, and this it was, with which maize was so often confounded. This, however, was not a species of Indian corn.

But the strongest evidence of its American origin is, it seems to us, that it has been found growing wild in some parts of the western continent, * which is not the case in any other part of the world. This alone would seem to prove it to be indigenous to America. We need say nothing of the fact, that grains of Indian corn have been found in the mounds of Peru. These mounds were probably built three or four hundred years before the conquest. There can be no doubt, therefore, that it was cultivated on this continent from time immemorial.

But it may now be asked, how are we to explain the numerous allusions to a grain, which, if not Indian corn, must have nearly resembled it? We have already remarked, that many of

* A variety has been found in Paraguay, which the Indians say grows wild in the woods.

the assertions of the early botanists confounded maize with sorghum. Other allusions, and those by the sacred writers, refer to wheat, which was indigenous to Asia, and almost universally cultivated. Mr. St. John admits* that there was, and still is, in that part of the world, "a very large grained wheat, called camel's tooth," which would naturally have given rise to the expression, "ears of corn," so often used. The misconceptions of Mr. Cobbett and others in regard to these references, arise from ignorance of the ancient mode of sowing wheat, or corn, as it was universally called by the old writers. Large fields of it were sown, between which, a narrow road or path was left for the public. This road was just wide enough for the carriage to pass without injury to the grain, there being no fences for protection, so that it might literally be called "going through the cornfields." It was sometimes gathered with the sickle, sometimes, by passing through it and plucking off the heads or ears, the reaper having an apron or pouch to drop them into.

Neither wheat nor rice were known to the first inhabitants of America, and we may with as much truth, say that Indian corn and the potato, were neither cultivated in Asia, nor the South Sea Islands.

It is well known, that maize was introduced into Japan by the Chinese.† But there are no grounds for believing, that the Chinese themselves, possessed it until the sixteenth century. We persist then, with Humboldt, in believing that maize was not transported from the centre of Asia to the table lands of Mexico. And, moreover, if we suppose that it was thus transported from Asia, how are we to account for the infinite varieties found in America, which, most certainly, were not found in Asia? Is it not more natural to suppose it to have originated where every variety of it was found, than where only one or two varieties, and those doubtful ones, were ever known to grow before the discovery of America by the Europeans? We may remark, also, that if we suppose that a species of maize was actually known in Central Asia, or to the Chinese, it may have

* History of the manners and customs of Ancient Greece, Tom. III., p. 407.

† Thunberg, *Flora Japonica*, p. 37.

been the case that the Indians of the extreme north-west of America had communication with the extreme north-east of Asia, and that some one or two species, by this means, found their way into Asia. If such communication existed, which we do not believe, the fact that it was found in China and about the Hymalaya, which is by no means established, would not prove it to be indigenous to Asia. Or, if one or two species were actually found, the fact that there were no more in Asia, and so many in America, would be a strong evidence of its being exotic in Asia.

This accumulative evidence seems to us to be satisfactory and conclusive. It was the custom among some of the earlier writers, to speak of America as being sterile and wanting in the most important vegetable productions. They little suspected the surpassing richness of the country which had been made known to astonished Europe. The infinite variety of plants indigenous to Mexico, to Central and to South America, where we suppose maize to have originated, is beyond description. No country on the globe can excel them in the boundless luxuriance of native, indigenous plants. Here, even the giant trees of the forest are loaded with flowers of every hue and variety. The purple and the blue, and the scarlet, the brilliant yellow and white, twine and mingle with every variety of green. Here are the fig, the sugar-cane, the indigo, the aloe and the pepper plants, the passiflora, the pine apple, and the endless varieties of the cactus, with its splendid and variegated blossoms. Here is the night-flowering cereus, the alspice myrtle, the clove, the nutmeg, mango guava, and an infinite variety of palms, rising often to the height of two hundred feet. Here, too, are forests of logwood and mahogany, of colossal grandeur, often surrounded with shrubbery and parasitic plants, with a foliage so dense that the rays of the sun can never penetrate. Here is the mimosa, majestic in its size, the beautiful acacia, and grasses that rise to the height of forty and fifty feet, with tree ferns and reeds without number, often seen a hundred feet high. The golden and rose-colored bignonias add their grace and beauty to the teeming masses of blooming life. The laurels become splendid forests. Plantains grow to gi-

gantic size, and beneath all, spring lilies and bulbous plants, as if not an inch of soil could be spared. Here also, the endless variety of creeping plants rise through the twining limbs with their myriads of brilliant flowers. Thousands of species still remain undescribed, and there may be thick and tangled forests which the foot of civilized man has never trodden. Nor is this rich luxuriance for a season alone; for the spring, or the summer, or the autumn. It is everlasting. The unfading verdure hides the very appearance of death. The trunks of the decayed trees, matted, and heaped together, form only rich beds for the living, to spring forth in the newness of life. The eye is sated with beauty. The air is filled with perfumes, and one is lost in wonder and amazement at nature herself. This is the native country of maize. A country unparalleled in the magnificence of its flora, and unequalled in the depth and richness of its soil!

The importance and value of Indian corn are too well known to every practical agriculturist, to need illustration. Upon this part of our subject we shall dwell but briefly. On every part of the globe where the hand of civilization has broken the turf, this beautiful grain receives a large share of attention. In the western continent it is raised from Canada to Patagonia, and the islands of the South Sea, through almost every variety of climate and people, and over an extent, from north to south, of more than seven thousand miles. It was introduced into Africa by the Portuguese in the sixteenth century, and is cultivated more or less, from the Mediterranean Sea and the Libian Desert, to the Cape of Good Hope. In Java and the Asiatic Isles, it forms an important product. In Central Asia it is known and valued, as well as in Australia and the islands of the Indian Ocean. In Europe it is extensively produced, in Hungary, in Lombardy, in France and Spain, and we might almost say, from the Ural chain to the Atlantic. No grain could secure such favor from all parts of the world, except from its intrinsic value. No other grain, in fact, except rice, is so extensively cultivated.

Its flexibility of organization makes it very easy of adaptation to climate and soil. Though it prefers moist and rich soils,

with strong heats, there are species of it which can be raised in tropical climates, at a height of more than nine thousand feet above the level of the sea. The warmest regions of the torrid zone produce maize in abundance, where three crops can be taken in a season, while the short summers of Canada have a species adapted to them. This cannot be said of rice, which requires great heats, and cannot endure a climate of high latitude. It is proper here to notice briefly, the more important varieties of Indian corn. There is one common in Hungary, which M. Parmentier endeavored to introduce into France. It ripens in two months. A still more remarkable species is mentioned by Oviedo* as being cultivated on the shores of the South Sea, which ripens in less than forty days. There are to be found in Spain alone, no less than one hundred and thirty different varieties. The species most common and valued here, are the large yellow, the red, which differs from it only in color, the sweet corn, and what is perhaps the most important, the Canada corn, known best in Maine and Canada, from its early ripening. Its yield is thought to be equal to the larger varieties. Seventy-five bushels of it, to the acre, have been raised at Nahant; as exposed a place, doubtless, as any in the county. The Egyptian corn has been preferred by some, while Cobbett's has the preference with others. These varieties have been tried together, in the same field, and the Egyptian found to be the earliest, and the Quarantine, or Cobbett's, next. There is also, a species called Valparaiso,—sometimes also, called Oregon corn, which, when roasted, splits in the form of a cross. A species called Tunicata, is found in Paraguay and in some parts of Oregon. Each kernel is covered with a glume, or husk. Owing to the difficulty of separating the grain from the glumes, it is of little value. The *zea caragua*, is a corn found in Chili, said to be hardy and long-lived. The Chinese have a remarkable variety called tree-corn, the ears of which hang at the ends of the branches. Nuttall describes a variety called the Early Mandan corn, cultivated by the Aborigines about the Missouri. It ripens in a climate where no other variety could exist. Other

* Lib. vii., c. i., p. 103.

species might be described, but it is sufficient to say, they probably all sprung from the common yellow, and that they differ from each other in the color, form and size of the grains, and in the time of maturity.

Indian corn ripens at a time when most other grains have been harvested. It therefore gives employment when there would naturally be but little else to do.

But what gives to Indian corn its great importance, is the actual amount of nutritive matter which it contains. It is said to be third in this respect, wheat and rice containing a somewhat greater amount, though many place maize second only to wheat. We have the analysis of Indian corn, which may be given as follows:—

Silica, - - -	38.45
Potassa, - - -	19.51
Phos. of Lime, - - -	17.17
Phos. of Magnesia, - - -	13.83
Phos. of Potassa, - - -	2.24
Carbonate of Lime, - - -	2.50
Carb. of Magnesia, - - -	2.16
Sulph. of Lime and Magnesia, - - -	.79
Silica, mechanically found, - - -	1.70
Alumina and loss, - - -	1.65—100

making in all, one hundred parts. In other words, we may say, on the authority of Dr. Dana, of Lowell, there are in it of

Fat forming principles, gums, &c., - - -	88.43
Flesh forming principles, gluten, &c., - - -	1.26
Water, - - - - -	9
Salts, - - - - -	1.31—100

A glance will show how greatly the fat forming principles predominate in the one hundred parts. There is hardly any grain which yields so much for the support of animal life. The difficulties and contingencies of raising wheat in the eastern parts of Massachusetts, have discouraged its cultivation, so that we may say that Indian corn, is by far the most profitable

crop, especially, as, when the offal is properly managed, there is no grain which restores so much to the ground. It is a fact, too, that it may be cultivated longer in succession than any other grain; and if kept dry, it may be preserved for an indefinite period without injury. The ease and rapidity with which it recovers from a drought is truly remarkable. Many predicted during the last summer, that the corn crop would be destroyed. The leaves were badly curled, and there was every indication that the crop would greatly suffer. Every one remembers how speedy was its recovery, and how rapid its growth after the change of weather.

As a fattener for cattle, swine and poultry, we may say, that Indian corn is unrivalled in utility. The analysis of Dr. Dana, as given above, is sufficient to show, at once, how important it is for such purposes. As a food for man, it is extensively used, though by some thought to be too stimulating.

The most common mode of cultivating, is to plant in hills about four feet apart. But our impression is, that where the largest crops have been obtained, the seed has been sown in rows or drills. In either case, it is now pretty well settled among farmers, that it should not be hilled, as was the custom but a few years since. There seem to be several reasons for this. If the earth is drawn up around the stalk at the last hoeing, it sends out new roots, which divert much of the nourishment which would otherwise have gone into the stalk and the ear. It is not unfrequently the case, that *aerial* roots, even, are emitted from the lower joints of the stem above the ground, and descending, fix themselves in the soil. This takes place on a very much larger scale, if these joints are surrounded with earth. If the earth is taken from the intermediate spaces, so as to leave hollows, the long branching roots become exposed to the sun, and cause the plant to feel the drought too severely.

Kelp, which washes up in winrows upon the sea-shore, has been found to be of valuable assistance to maize. It should be equally spread over the ground and ploughed in.

But it was not our design to allude to the modes of production. Every practical farmer is already familiar with these from

experience, to say nothing of the easy access to our well conducted agricultural journals, which keep up with every new improvement in all departments of husbandry. If we have succeeded in throwing some light and interest over the history of this valuable grain, our aims are accomplished.

In conclusion, we would say, that if America has furnished the Old World with maize, the potato, tobacco, cocoa, vanilla, and other plants useful to man, she is herself, indebted to the Eastern continent for wheat, barley, oats and rice, for the coffee plant, now one of her staple products, for oranges, lemons, peaches, and many other plants, which now grow in great luxuriance, both in the tropics and in our temperate climates. These plants, Europe had been receiving for more than twenty centuries, from the Greeks and Romans, and from the nations of the East, till they had accumulated in rich profusion upon her Western shores. Now, many of them, together with many of our own, are borne on to the islands of the South Sea, still further West, whither the restless march of civilization is tending. The natural gifts of one country to another, facilitated by commerce and the arts, are fast binding together the remotest corners of the globe. Let the full tide of civilization roll on! Let commerce bear to every land, and to every island in the sea, products which shall humanize mankind, and increase the aggregate of comfort and happiness! These are the fruits of peace!

AN ESSAY ON THE CULTIVATION OF INDIAN CORN.

BY WILLIAM R. PUTNAM.

The cultivation of Indian corn is one of the most important labors of the farmer. Accustomed to it from our youth, it is not easy to discriminate what is necessary to be done. It will be my purpose, to notice such incidents in the culture of this plant, as have seemed to me most worthy of attention. My ideas have been gathered in the field, and not in the closet. If they are found rude and unpolished, my engagements, from "early morn to latest eve," must be my apology.

Before treating of the cultivation of Indian corn, it may be proper to inquire, if it is a crop of sufficient importance to demand increased attention from the farmers of the county.

Some are of the opinion, that, with the present high price of labor and manure, we cannot compete with western farmers in raising corn ; that, with the increased facilities for transportation, we shall soon be run off the track ; that we had better buy our corn, than raise it. This may be good economy for those who are situated near our large towns, so that they can daily carry their produce to market, and can obtain manure without feeding out their crops to stock upon the farm ; but for most of our farmers, who are, in a great measure, dependent upon the manure of their stock to enrich their lands, it is better to raise corn, than to buy it.

Taking the average price of corn for the last six years, we may safely estimate, that a bushel of ears of corn is worth forty cents. I am aware, that it usually costs nearly this sum to raise corn ; but then it is one of the best preparatory crops for all others, and the fodder is of much value. The corn crop possesses some advantages over most other crops. The seed costs but little ; it is comparatively sure ; it can be kept for a long time ; it requires but little attention in haying time.

The main object of most farmers, in cultivating their land, is to prepare it to produce more grass. Much of it, after it has been planted, and sown with grain and grass in the usual way, produces but little more than it did before ploughing. Some of the agricultural journals, within a few years, have recommended turning over grass land, and seeding it down again, without an intervening crop. On very low, wet land, this is a good method ; but on land that will admit of cultivation, it is better to plant corn, and sow the grass seed among the corn.

Land that can be ploughed smooth enough to sow on the furrow, in August, may be ploughed as cheap for corn, in November, or the following spring. The expense for applying the manure will be no more. If we use manure sufficient to produce two tons of hay, we may expect one hundred bushels of ears of corn per acre. The expense for planting an acre, after the manure is put on, will not exceed two dollars ; the cultiva-

tion, while growing, need not exceed five dollars. The corn fodder, and what hay it will produce more, for the next four years, will pay for the extra expense of planting and cultivating, so that we shall have the one hundred bushels of ears of corn, as gain of one method over the other. This method of renovating old grass land, has many advantages over that of seeding on the furrow. It pulverizes the soil better, and we have a rotation of crops, in some measure; as the corn roots decay, they furnish food for the grass, and it is not so liable to be winter-killed. There are hundreds of acres of land in this county, not exactly pine plain land, which produce but little hay, as they have usually been cultivated. When the manure for corn is all put in the hill, and the grass seed is sown among the grain the next year, it is either injured by the dry weather of summer or the frost of winter, or else it is so poverty stricken that it does not grow. Such land will yield a good crop of hay, if we apply a good dressing of well composted manure, and sow the grass seed among the corn, the latter part of July.

If we wish to put a part of the manure in the hill, we should furrow it deep, so that the manure may be below the surface. This will keep the land level, and without any hills about the corn. When the corn is harvested, the stalks should be cut near the ground. The following spring, when the frost is out about an inch on the surface, with a sharp hoe cut them off, while the roots are held fast by the frost. As soon as the ground is dry, so that it will not be injured by the cattle, it should be rolled. It is much better mowing on a corn stubble than it is on a grain stubble, for the old grain stubble injures the edge of the scythe.

When we sow the grass seed, it is well to count the rows; then we may know how much seed we have to sow in each row; then take one half of the seed, and go through the rows one way; then go the other way with the remainder.

The cultivation of roots for feeding stock, is, by some writers, highly recommended; but I think it not best for the farmers of this county to depend so much upon roots, for their stock, as English farmers do, who cannot raise corn. Our cat-

tle will do better when fed upon different kinds of food, than when confined to one sort. Every farmer ought to raise some roots, to feed his stock, when he is using his coarse fodder.

From the first view of the statements published in the transactions of the society, it would seem that the carrot crop was much more profitable than corn. But it may not, under all circumstances, be best for the farmer to apply so much of his manure to one acre, for carrots, and to neglect the rest of his farm. The question is not, how we can raise the most from one acre of land? but, how we can, with the least expense, keep the most stock upon the farm? If we take the ten cords of barn manure, that was applied to one acre of carrots, and compost it well with meadow mud and soil, this will manure four acres of corn, which will probably yield fifty bushels to the acre. This, for the farmer who has grass land that needs ploughing, would be better than to put it all on one acre, for carrots.

I have found that the same land, manured alike, will yield about one-third as many bushels of corn, on the ear, as of carrots; or, in other words, we can get a peck of cob meal as cheap as a bushel of carrots. The question then arises, which is worth the most—the peck of meal, or a bushel of carrots,—for stock? My opinion is, that if we cut the hay, the meal will be worth the most; but if we feed on dry hay, not chopped, the carrots.

On Ploughing Land for Corn. The best time for breaking up a stiff, hard soil, is late in the autumn, that it may be more exposed to the action of the frost. For a light soil, it is better to defer the ploughing till about the time for planting. It is often more convenient to plough early in the spring, as soon as the frost is out, when the land can be ploughed much easier than at any other season; but it injures most land to plough it then; it hardens like mortar as it dries, and it will require more labor to keep it properly cultivated.

On warm, loamy land, where the corn is often injured by the cut worm, it is well to plough the land in August, then cross plough in the spring; this will destroy the worms. The yel-

low wire, or stick worm, which often injures the corn about the low places in our fields, is not killed by ploughing. Some recommend carting sand or gravel on to such places, to destroy the worms; if it does not kill them, it will probably help the soil.

The Proper Depth for Ploughing. The old adage says, "Plough deep, and you will have corn to sell and to keep." It may appear presumptuous, to question the truth of anything that has passed into a proverb, but I think this assertion much too broad. Deep ploughing is an important requisite, yet this alone will never secure a good crop. If our quantity of manure is small, and the soil a cold one, which has never been ploughed more than five inches deep, if we were literally to adopt the adage, and plough deep, we probably should have corn neither to sell nor to keep. My advice, to those who wish for the permanent improvement of their soil, is, to plough no more land than they can manure well, and to plough this an inch deeper, each successive year; by thus mixing the subsoil with the surface soil, both will be improved. I have often thought it strange, that so little difference should be made, by the trustees, in ploughing with single and with double teams; unless it is thought, that land ought never to be ploughed more than seven inches deep. If premiums were offered, for ploughing five, seven, and nine inches deep, we should have the different sizes of ploughs brought into use, which the farmers need; and it would give the owners of the land, where the ploughing matches are held, a good opportunity to see which is best, deep or shallow ploughing.

On the Use of the Subsoil Plough. We have not seen that benefit, resulting from the use of the subsoil plough, which we anticipated, when we procured it, in 1841. We used it for three years, without perceiving any advantage from it. Since then, we have not used it ourselves, nor had any opportunity to lend it to our neighbors. The cost of subsoiling, I estimate to be five dollars per acre. I think that two dollars extra expense, in cultivating the crop while growing, will benefit it more than subsoiling. Most of the land, upon which we used

this plough, was a loamy subsoil ; perhaps some other soil would be helped more, by the use of it.

I have no doubt, that the subsoil plough may be advantageously used, for some crops ; but for a corn crop, it will not usually pay for the expense. My view is this : Lands that are highly manured, will be able to sustain a greater crop, but subsoiling does not enrich a poor soil. Our crops of corn do not generally suffer so much for the want of moisture, as for the want of proper food. It would be poor consolation to a ship's crew, to know that they had water enough, but were out of provisions. The water which the camel carries in his extra stomach, would be of little use to him, in crossing the desert, if he could not obtain provisions by the way. Until we have well manured and pulverized the surface soil, to the depth of ten inches, I think we may as well let the subsoil alone.

On Turning the Furrow Slice Flat, at the Time of Breaking Up. I am aware that there is a difference of opinion on this subject. Some say that the furrow slice should be lapped, or set obliquely, so that the land may lie lighter, and be more easily cultivated. Experience has taught me, that land turned flat can be cultivated the easiest, and will produce the best crop. If we have a foe to contend with, we can usually manage him best, if we lay him flat upon his back. When we plough tough, swarded land, abounding in witch grass, eight inches deep, and turn it flat, we shall have four or five inches of soil on top, without any roots in it ; but if it is set obliquely, we shall have part of the roots on top, and they will be growing up, between the furrow slice, all the season. Our aim, in breaking up land, should be, to place the grass and roots in that position where they will decompose the soonest ; if set obliquely, the harrow brings many of them to the surface, so that they will not rot. I do not want a breaking-up plough to pulverize the soil, but to turn it over, and put the grass and roots out of the way, so that I can pulverize it with the harrow and horse plough.

On Preparing and Applying the Manure for the Corn Crop. Formerly, it was the custom to apply all the manure in the hill. For some years past, many have spread all their manure. It is an important question for the farmer to settle, how he can best

apply his manure, so as to supply the growing corn with the proper nutriment, at the right time. If the manure is well rotted, and all put in the hill, it will produce too great a growth of stalks, and fail of affording proper nourishment when the corn is filling.

If we use new manure, and spread all of it, the corn does not start soon enough to get fully ripened. We have succeeded well in some fields, by ploughing a part of the manure under the sod, at the time of breaking up; in other fields, we could see but little advantage from green manure, thus ploughed under. Why this difference? The top soil was nearly alike, but the subsoil was different. My view of this is, that where the soil and subsoil are warm, so that a decomposition soon takes place, it is well to plough under a part of the manure; but if the subsoil is cold, it is not best to plough it under. To illustrate my meaning, suppose two cooks preparing their dough for a batch of bread, and both by the same rule. When they set it away to rise, one puts it upon the cellar bottom, the other upon the warm bricks of the hearth; the latter has good bread, but the former complains of the rule, as the bread will not rise.

Is it good economy, to spread green manure, and harrow it in, for a crop of corn? Some farmers are of the opinion, that they can make a good compost in this way, and thus save the labor of forking it over. They say, if mixing manure with the soil, in the compost, will make good food for plants, so it will if we mix it in the field. Are we sure of this? By mixing flour, water, and yeast together, we sometimes get good food for the human stomach; but it is not always the case, when they are put together. Perhaps it may be offensive to the taste of some, to compare the kneading dish, in the farmer's kitchen, to his compost heap; but they are both laboratories, where a chemical process is performed: in the one, to prepare food for the stomach; in the other, for his plants. If, to save labor, the dough is not properly kneaded, the bread will be poor, and there will be a loss of material. So in harrowing in green manure. When we mix green manure and soil together, in the compost heap, the temperature is soon raised. This is not the

case, when it is mixed in the field, by harrowing; and it is a long time before it can become proper food for plants. He who spreads his green manure on the surface, to be mixed with the soil by the harrow, if he succeeds in covering the most of it, generally leaves it in bunches, and in such a situation, that it will not soon decompose.

If we have warm, dry land to plant, we may plough under half of the manure, and spread the remainder, after it has been well composted. If the land is cold, I would recommend to compost it, and spread one half of it, and put the other half in the hill.

The Proper Time for Planting. We should be governed more by the state of the land, than day of the month. If the land be warm and dry, we may plant the last week in April. As a general rule, from the first day of May to the tenth, is the best time to plant.

The Best Kind of Corn to Plant. We have planted many of the different varieties of corn, for a few years past, but have found none that we like so well as that which we have raised the longest. This, I think, is the case with most farmers; they succeed better with their old variety, than with new varieties. Corn is not like the potato, in this respect. We sometimes get a new variety of potato, that does well for a few years, and then fails. Not so with Indian corn. Like a true friend, it improves upon long acquaintance. At one time, the Baden corn was highly recommended, as it would produce many ears upon a stalk, but when planted as close as we planted, it produced no good ears. There can be no objection to two good ears growing upon one stalk; but, as a general thing, if the nutriment which goes to support the husks and cob of the extra ears, was to go into one good ear, it would be more valuable than two poor ones.

The twelve-rowed corn is thought highly of by some, but with us, it does not yield so well as some of the eight-rowed varieties, and the cob being large, it does not dry well. We have sometimes planted a white eight-rowed kind, which yields well, and is very hard and flinty; but it falls down much more than some other kinds, and it does not give so good

a color to the milk and butter, when fed to milch cows. As a general rule, that is the best variety, which produces the greatest amount of grain, in proportion to the stalk and cob.

Selecting the Seed. Preserve the early ears for seed, is what we are often told to do. This may be well, if we raise a large, late variety ; but would it not be well to save the best ears for seed, rather than the early ones? I have never seen a very early kind of corn, that was very productive.

The Proper Distance Apart, at which to Plant. If we plant corn without any regard to sowing grass seed among it, three feet and a half apart, each way, is the proper distance. But if we wish to sow grass seed among it, we had better plant four feet apart ; it is better passing through it, when the corn is large, and the land is not shaded so much. When planted this distance apart, we may leave five stalks in each hill.

The Cultivation, while Growing. If the plough and cultivator are used faithfully, but little need be done with the hoe. Since the introduction of the cultivator, many have laid aside the horse plough ; but both, I think, ought to be used, unless the land is very mellow, so that the cultivator will go six inches deep. On a hard, wet soil, planted early, the cultivator, alone, makes but little impression. If we use only the plough, it does not break up the lumps. Use the plough first, then let it dry for a few days, then use the cultivator to make the soil fine, then plough again. Afterwards, we use only the cultivator, or harrow ; there is no danger of using either of these too much, for the good of the corn.

Hilling Corn. I was taught to make a large, flat, square hill, at the first time of hoeing ; to raise it some, at the second hoeing ; at the third, or last hoeing, to draw all the loose dirt up around the corn ; and was told to do this, so that the corn might stand up the better. I know not where this idea originated. Perhaps it sprung from the practice of using the stay and corset, to keep the form erect. Experience and common sense alike teach, that both will be better off, without such support. If all the manure has been put in the hill, it may be necessary to make some hill about the corn, to prevent the manure from drying up.

Cutting the Top Stalks. The wisdom of nature is manifested in the growing corn, by causing the stalk to grow far above the ear. The seed, or pollen, is thus placed in a situation, favorable to be wafted by the wind to the silk, which is connected with each kernel. As soon as the ear is filled, the top of the stalk begins to die ; and this would seem to indicate, that it might then be removed, without much injury to the grain. It is the opinion of some, however, that the corn is injured, by this process, more than is gained by the increased value of the fodder.

Perhaps the inquiry may not be out of place here, which is the best way of using the top stalks,—to cut and dry them for winter food? or, to feed them out green to the stock, in September? By referring to the report of the committee, on the comparative value of crops, as food for cattle, in the transactions for 1848, I find that doubts are expressed, as to the value of green corn stalks, as food for milch cows. It is also stated, “that some farmers are of opinion, that the fodder procured from the corn field, will nearly pay for the labor of growing and gathering the crop.” Now, if corn fodder is worth but little when green, we had better not spend much time in trying to dry it for winter use. So far as my observation goes, having given some attention to the subject, I am fully of the opinion, that green corn fodder is one of the best crops that we can raise, for the producing of milk ; though it is well known, that it will not produce so great a flow of milk as green grass.

Every one who has been accustomed to milking cows, knows that, about the time of cutting English hay, the cows begin to dry up ; and that, when the feed is good in July, they will gain in flesh, but will not give so much milk as in June. This shows, that green grass will make more milk, than it will after it has ripened. By the first of August, the feed in most of our pastures begins to fail ; the fall feed is not sufficiently grown, to afford a supply ; we are then without a full supply of green grass, and the question is, what shall we have for a substitute? My answer is, green corn stalks. Those who use their milk for making butter, will find, that, when their cows are well fed with corn stalks, they will not be troubled with white, soft but-

ter, in dog days,—which is often said to be owing to the weather, when, in fact, it was because the cows had not proper food. Another advantage, arising from feeding cows with corn stalks at this time, is, that they are not so likely to become breachy. Hunger, at this season, impels them to seek for food beyond the fence, and they form habits which are a constant annoyance, the year round.

There is one general rule, by which we can tell, whether a particular kind of food has a tendency to produce a great flow of milk, or not; that is, by noticing the effect which it has upon the solid excrement of the cow. Green grass produces a great flow of milk, and causes the excrement to be soft. Potatoes make the excrement softer than carrots, and produce more milk. Wheat, bran, or shorts, make it softer than Indian meal, and produce more milk. Green corn stalks make it harder than grass, but softer than English hay. My inference, then, is, that they are better for making milk than hay, but not so good as grass.

But to return to the question, which is the best way of using the top stalks? They are of more value, cut and fed green to our stock, than used in any other way. I know that, in September, our cows will live without them; but if the cows are well fed with stalks, in the morning, before they are put in the field, we can make the grass in the field last much longer, and the cows will do better than they will with a full supply of grass for a few days, and then be cut short. Working oxen will do well, fed upon green stalks, in September. If we wish to fit our oxen for the butcher, there is no way to do it cheaper, than by feeding them well with green stalks, in addition to what they get in the pasture.

The fodder which is put in the barn, should be used in the early part of winter, for it is then better, and is eaten more readily, than it is after it becomes thoroughly dry.

Harvesting. When we have a cold season, and the corn is likely to be injured by the frost, it is best to cut it up, as soon as it begins to harden, and stook it. In some parts of New England, this is the uniform practice. It has some advantage over that of topping the stalks; the fodder is better, it can be

removed from the field sooner, and the green and poorer part of it is much better than it is when the top stalks are cut, and it stands exposed to the frost. Many object to this method of harvesting, because it makes bad husking. When the corn is small, it can be harvested as cheap this way as the other.

Some recommend this way, when grass seed has been sown among the corn, as the grass will not be shaded so long. But I prefer to top the stalks, and thus let the sun in upon the grass. If the corn is stooked upon the grass, it kills it under the stook ; and if it is removed, it is a good deal of labor, to cart off fifteen tons of green corn, which we sometimes have upon an acre.

It is the usual method of harvesting, where the stalks have been cut, to cut it up at the bottom, and cart it to the barn, to husk. But when the corn is large, I prefer to break off the ears, and carry them to the barn, and to get in the fodder when it is dry. When the corn is housed, it should be placed in bins, where the air can circulate freely, to prevent its moulding.

After it has been safely housed, it may be proper to inquire as to the best way and time for using it. It is now almost the universal custom to grind it with the cobs, for cattle and hogs. This is, probably, the best way. Does the corn ever possess any more nutriment, than it did at the time it was housed ? We know that a bushel of dry corn will weigh more than a bushel of green. This we can account for, without supposing it derives nutriment from the atmosphere, while drying. Corn being more dense than water, as the sap escapes, the density increases.

I have thus freely given my views, with the hope that others, who handle the plough and hoe, will do the same ; that by comparing our views, we may learn the best method of cultivating this valuable crop.

MIDDLESEX AGRICULTURAL SOCIETY.

THE annual cattle show, ploughing match, exhibition of fruits and manufactures, and trial of working oxen, were held by this society at Concord, on Wednesday, the 3d day of October last. The weather had been cold and stormy for two or three preceding days, which prevented the exhibition of many animals, that would otherwise have been presented from the remote parts of the county. The show was, however, respectable as to numbers, and some of the animals were of superior excellence. Owing to the destruction of the court house by fire, the society was deprived of its customary accommodation for the display of fruits and household manufactures. Yet the exhibition was gratifying to the visitors, both producers and amateurs, and was much larger than had been anticipated.

The address was delivered by the Hon. Lilly Eaton, of South Reading.

ON FARMS, &c.

The committee appointed to examine the claims for the society's premiums on farms, reclaimed meadows, fruit and forest trees, and cranberries, submit the following report:—

The premiums for the best cultivated farms were claimed by ten individuals. There were nine applicants for the premiums on reclaimed bog and peat meadows, and twelve for the premiums on fruit trees.

FARMS.—The committee began their examinations on the farm of John H. Bent, of Concord. Mr. Bent purchased his farm in December, 1847. It contains about thirty acres. It had been let out for a pasture thirty years previous to his purchase, for about thirty dollars a year, and was nearly all covered with brush, except two acres around the buildings. In the spring of 1848, he cleared and ploughed about ten acres.

In the autumn he seeded down seven acres and a half, carried on forty loads of manure and about two hundred loads of loam, which he collected about the buildings and fences. This year, he cut on an acre and a half, 3,200 pounds of hay; on another acre, 2,629 pounds; and on the remainder, about two tons to the acre. He has two acres of corn, two of potatoes, four of oats, and half an acre of beans. Two acres he is preparing to sow with grass this fall. The remainder of the farm is nearly in the state in which he bought it. He built a barn last year, fifty feet by thirty-eight, sixteen feet posts, with a cellar. He has earned more by working out, than he has paid for all his hired labor.

The committee next visited the farm of E. A. and A. Lawrence, in Pepperell. This farm was examined by a committee in 1847, who then awarded to its industrious proprietors the third premium. The committee are so well satisfied with the improvements since made by these gentlemen, that they have not hesitated to assign to them the *second* premium.

The committee proceeded to view the farm of Robert Chaffin of Acton. They were highly gratified with the general appearance of the premises, and especially with the beautiful and substantial walls by which it is enclosed. The barn, also, was an object of particular admiration. It had a spacious cellar, in which, the committee judged, there were at least forty tons of excellent compost, and sufficient room beside for carts, wagons, ploughs, &c. The smaller agricultural implements had an appropriate place on the floor of the barn. Every thing about it, indicated the utmost care and neatness. There were also two large piles of compost manure, on other parts of the premises, awaiting the convenient time to be spread on the field. Had it been within the province of the committee, (as in former years) to award the premiums offered for the largest and best quantity of compost, they would, undoubtedly have presented it to Mr. Chaffin. Mr. Chaffin received, for his farm, the society's *second* premium, some years ago, and would now have been entitled to the *first*, had not the committee believed it their duty to dispose of it to another competitor. The details of Mr. Chaffin's agricultural operations are given in his state-

ment, which is recommended to the attention of his cotemporaries in the practice of husbandry.

The next farm, visited by the committee, was that of William Gibbon, in Marlboro', which contains thirty-seven acres,—mowing, pasturing and tillage. It has been in the possession of Mr. Gibbon since 1833. At that time, it kept for stock, three cows and a horse. It now maintains six cows, a yoke of oxen and a horse, and produces four or five tons of hay for sale, beyond the quantity required for the support of the stock. The farm is fenced with stone wall throughout, most of which Mr. Gibbon has relaid, or made. He has set out and grafted two hundred and fifty apple trees, one hundred peach trees, forty quinces, most of which are in a bearing state. The average annual produce of the farm, he estimates as follows:—apples, one hundred barrels; cider, ten to twenty barrels; quinces, six to ten bushels; corn, fifty bushels; potatoes, one hundred bushels; oats, thirty bushels; carrots, one hundred and forty bushels. For the last five years, he has sold his milk at the door, and received in 1848, for milk and calves, \$220 00.

William Buckminster, of Framingham, invited the committee to visit his farm, and presented to them a statement, which, after investigation, they found to be a fair representation of what has been done, and what may reasonably be expected, from Mr. Buckminster's well known industry, guided as it is, by intelligent experience and persevering study.

From Framingham the committee proceeded to Lincoln, to view the farm of Daniel Weston, for a general description of which, the committee refer to his statement. The committee were much pleased with the arrangement of Mr. Weston's barns and sheds, the cellar for the saving of manure, and the conveniences for watering cattle. In the autumn he throws into the barn-yard from seventy-five to one hundred cart loads of meadow mud,—which, as his cattle never leave the yard for drink, receives all their droppings. His barn cellar is forty feet long and twelve feet wide, sufficient to contain all the droppings of the cattle, which are kept in stalls during the night. He keeps seventeen head of cattle in summer, and ten

in winter, and takes care to keep their manure well mixed with meadow, mud and loam.

The next farm visited by the committee was that of J. D. Fiske, of Waltham. Mr. Fiske deserves great credit for his skill and industry, in rendering a rough and unproductive tract of land a pleasant and profitable farm. The committee cheerfully recommend him and his labors to the favorable notice of the society, when their committee shall have more premiums to dispose of, or he shall have less successful competitors.

The committee next looked at the farm of Nathaniel P. Morrison, of Somerville, and satisfied themselves that its owner has been industrious, skilful, persevering and successful, in renovating an old worn-out soil, and rendering an almost worthless estate a place of great value. Mr. Morrison's statement is an interesting account of his operations, which, without doubt, will hereafter entitle him to a high premium from the funds of the society.

By invitation from John Gordon, of Brighton, the committee visited his farm at Brighton. Mr. Gordon turns his attention chiefly to the raising of fruits, and in regard to this agricultural product, he exceeds all that have invited the attention of the committee. His fruit trees of all kinds,—apples, peaches, pears, and plums,—are in the finest condition. That portion of his farm, not expressly appropriated to the raising of fruit, is chiefly in grass, and produces a fair return for the expenditure of labor and capital. For a statement of his method of cultivation, Mr. Gordon referred the committee to his letter of last year, which is published in the volume of *Transactions of Agricultural Societies*.

William Buckminster's Statement.

The farm which I now own and occupy, has been in my actual occupation but three and a half years. It was purchased by me in 1836, but for the last five years it had been occupied by others, whose system it was to shave it as close as possible, keep but little stock, and sell off the produce.

Thus on the eighty acres of cleared land, of which the farm consisted, only four cows were kept in summer, and yet thirteen acres of corn were planted in a year, and the crop was mostly sold off. Since that time, six to eight acres of the land have been cleared for pasture ground, and the farm now consists of nearly ninety acres of cleared land.

Since I first became the owner, I have built and reset one hundred and eighty rods of good stone wall,—sixty on the county road,—fifty on the saw mill road,—thirty between meadow and pasture,—and thirty of faced wall on two sides of the garden, and ten behind the tool house. Much of this wall cost me one dollar a rod. The wall on the county road was so rebuilt as to make the road half a rod wider for the sixty rods in length. The wall on the saw-mill road was much of it made new, and the whole road, (fifty rods long) and three rods wide was laid out by me and given to the public for a town way.

On this farm I now keep twenty-five head of cattle, sending off eight to ten young cattle to a distant pasture for four months. From this stock and half a dozen hogs, on the average, I make three hundred loads of manure annually. With this I am fast recruiting the farm that was so hard run for five years.

I now cut forty to fifty tons of hay, and plant four acres of corn and one of potatoes, besides the acre of garden that has a variety of products for family use,—thus manuring six acres of tillage land, in addition to two acres of nursery trees, and the mowing ground. Of corn, I harvest more than sixty bushels an acre. Of rye, the average is ten bushels, as the ground is not manured. I have three acres of this.

Within the term of four years, six acres of the low meadow ground, that produced nothing but poor meadow hay, have been converted into good English mowing, where two tons are the average crop per acre, in addition to the rowen,—much of this second crop is half equal in quantity to the first.

Within the same term, five acres of pine swamp land have been cleared and brought to bear good English grass without the aid of manure. One acre of it has been cleared of the

stumps, and this bears two tons of hay. The other acres average one ton.

Within three years, three hundred fruit trees have been set,—most of them apple trees of the best kinds,—and one acre more has been set with peach trees. Also twelve thousand nursery trees have been set, and thoroughly cultivated,—half of them have been grafted or budded, and many will be large enough for transplanting next year. All the nursery trees were raised from the seed that was sown in 1845. Five hundred thrifty pear stocks have been set this season,—these were purchased.

Eight cows are kept at home in summer, and the milk is sold in the village.

Within three years, one thousand dollars have been expended in enlarging the house and barn, building a wood-house, tool-house, corn-house, a double carriage house, and two sheds, eighty feet in length, to shelter the cattle and manure in the cow-yard. In addition to this outlay, I have built a separate dwelling-house, suitable for a hired man and his family, at a cost of four hundred and fifty dollars.

At home a lead pipe, of one inch bore, has been laid to a fine well, fourteen rods distant. Through this a copper pump brings water into the kitchen, with the slight labor of a child. The pipe is so good that the water is drawn as easily as if the well was under the house of the depth of twenty feet. The cost of this, including the pump and digging to lay the pipe, was nearly fifty dollars.

All this outlay will be repaid in the improved facilities for managing the farm, as the whole was founded on the principle of utility. No manure has been purchased, for the produce has all been expended on the farm, and that, in good time, will make the farm rich enough.

The produce of this farm is not represented as large, compared with the number of acres of cleared land. It is not half what it should be, and will be, under proper cultivation. But the farm was much exhausted and run down at the time when I took possession in 1846. My claim is for "betterments." I think I have much improved the farm.

FRAMINGHAM, *Sept. 5th*, 1849.

E. A. & A. Lawrence's Statement.

Our farm contains one hundred acres. Soil, slate and gravelly loam; thirty-five acres in mowing and tillage; the remainder, pasturing. We plant, this year, five acres with potatoes. Since the potato rot has appeared, we have made use of but little manure in raising potatoes, substituting peat mud, plaster, and ashes. We have planted ground, where we had corn the previous year, putting a handful of plaster and ashes in the hill; and on peat land, by putting straw in the hill. Average yield, about two hundred bushels per acre.

We plant two and a half acres with corn. We plough our ground for corn, as soon as is convenient, after haying; and, in the spring, spread about fifty loads of compost manure, from the barn cellar, and plough it in. We also make use of a small quantity of plaster and ashes, about the hill, in planting. Average yield, from sixty to eighty bushels per acre. We have improved twenty-five acres of pasture land, by planting; manuring in the hill, with compost manure. We sow down our ground to grass, in the spring or fall, as circumstances may require. We have reclaimed three acres of peat meadow, by draining; removing stumps, roots, &c., to the amount of about twenty cords per acre. We planted it first with potatoes, then carted on gravel, and seeded it down to grass; yield of hay, two tons per acre. We have also reclaimed five acres of rough pasture land, which produces about two tons to the acre. We top dress our meadow and wet land, once in two years. We cut ninety tons of English hay; our cattle, on an average, number about twenty. We keep a considerable number of swine to increase our manure, and save the wash of the dairy. We keep eight cows, making from eight hundred to eleven hundred pounds of butter, annually. We have dug a cellar under our barn, twenty-five by seventy feet. It is connected with a hog yard, by a covered drain, for hogs to pass and repass. We cart in sods, peat, and earth, to the barn-yard and cellar. Five cows stand in the barn, all the nights of the year. We have also prepared a bed of peat, which increases our manure, by absorbing the water from the sink drains, &c.

We have improved our farm, by building four hundred and fifteen rods of stone wall, seventy-eight rods of half wall. We have grafted most of our old apple trees ; raised and set out three hundred and seventy-five apple trees, five hundred peach trees, one hundred pear, plum, cherry, and quince. We use ashes about the roots of young trees, hoeing the grass from them, and washing them with strong ley. In the absence of A. Lawrence, for a year past, a boy has been employed seven months, at seven dollars a month. Extra help, for haying, and other work, fifty dollars. We came on the farm in 1839, and have employed no capital, excepting such as the farm, with our labor, has afforded.

PEPPERELL, Sept. 3, 1849.

Daniel Weston's Statement.

My farm, which I offer for your consideration, consists of eighty acres of land, forty-six of which I came in possession of in 1828. In 1834, bought twenty-one acres of pasture land ; in 1846, bought thirteen acres. The fences were in a very dilapidated condition ; and, from that time to the present, I have new set old walls, and built new, between three and four hundred rods ; cash paid for the whole, above my own labor, not exceeding fourteen dollars. The buildings upon the premises were poor ; the sum paid for repairs amounting to one thousand dollars. When I first came upon my farm, it was in a very low state of cultivation ; not producing more than twelve tons of hay per annum. I have reclaimed ten acres of meadow land, and brought the farm into such a condition, that I now cut between thirty and forty tons of hay. There is a diversity of soil ; some consists of light, sandy loam ; other of black ; some of a light, deep yellow loam. My method of raising corn, is to plough the ground, the last of September, about eight inches deep, keeping it as level as possible ; and, in the spring, cart on forty loads of compost manure to the acre, spreading it over the ground, using the harrow and cultivator ; cross it out, both ways, three feet apart ; hoe twice, keeping it level ; never

planting it on the same ground, two years in succession ; preferring potatoes, the second year. For potatoes, using the same quantity of manure as for corn, furrowing it out only one way, dropping the potatoes about a foot apart, in drills ; by this method, I have, from one hundred and seventy-five to two hundred bushels to the acre. I plant from five to six acres a year. I have an asparagus bed, the produce of which amounts to between forty and fifty dollars a year. Also, a strawberry bed, consisting of about a quarter of an acre, yielding from seventy-five to one hundred dollars a year. I have three hundred peach trees, one hundred and fifty of which are in fruit this year ; probably between two and three hundred bushels will be obtained from them this year, worth from three to four hundred dollars ; two hundred and forty engrafted apple trees, averaging one hundred barrels a year. Also, one hundred quince bushes, producing about ten bushels a year. I have forty-two Bartlett pear trees, part of them in a bearing state, and thirty Green Gage plum trees, but have not much profit from pear or plum trees at present, they being young. My method of cultivating fruit, is to keep the ground tilled ; planting, when the trees are small, either corn, potatoes, or beans, and manuring freely. I keep upon my farm, eight cows, one yoke of oxen, and one horse, during the summer season. In winter, seventeen head of cattle, selling my milk the year round, which amounts to three or four hundred dollars a year. The labor upon my farm, for the last eight years, has been performed by myself and son, excepting one man through haying, which takes from twenty to twenty-five days. In addition to this, seventy days of my time is taken up in going to market.

Eight years since, I commenced reclaiming about ten acres of meadow land, producing only sour kinds of grass, beaver grass, and buckhorn. I commenced upon about three acres, by carting on yellow loam, after digging a ditch around, and through the centre,—covering it three inches deep, and carting on compost manure, and seeding it down in the fall. I very soon found, that this method was not a good one ; the loam making a hard body, it held the surface water, by that means killing out the grass. In a few years, I found it necessary to

plough it, (the wild grass coming in,) keeping it level; and, since that time, it has produced a very good crop.

Not being satisfied with this method, I adopted another; I drained the remainder of my meadow, and took off the bogs. I let it out to Irishmen, at twelve dollars an acre; burnt it over, and obtained a good crop, for two years, without top dressing. This last I consider the cheapest, easiest, and best method, of reclaiming wet meadow land.

LINCOLN.

N. P. Morrison's Statement.

In the management of my farm, my object has been to improve the land and trees, so as to realize the greatest profit from the least expense. I purchased my farm, in 1842, for \$5,000. It consists of between nineteen and twenty acres, eight or nine of which includes the buildings and fruit trees, the remainder, when I purchased it, was a stony, worn-out pasture, which would not produce two hundred pounds of oats to an acre. I commenced ploughing, digging out the stones, and manuring it, till it became productive, and suitable for all kinds of vegetables. I have set on the same, between eighty and ninety apple trees.

I have, in all, about six hundred fruit trees; about forty kinds of apples, twenty kinds of pears, forty quince trees, forty cherry trees, a few peach and plum trees. When I purchased, my orchard was principally grass ground, which I consider to be very injurious to the growth of the trees and fruit. It was impossible to plough near many of the trees, in consequence of low limbs. I commenced pruning about the last of February, I think, 1842, and made a dreadful havoc, both to limbs and trees, as many good and experienced farmers thought, and assured me that I was "spoiling my orchard." I commenced grafting, also, during the same spring, and have continued to graft, each succeeding year. I have taken the tops from about sixty trees, many of which were more than a foot in diameter. I gathered from one tree, the third year after grafting, three barrels of Baldwin apples; fifth year, five barrels.

The trees are now in a healthy condition. My horses can walk under and near every tree, so as to plough with all ease. I prune and scrape my trees every year, generally in February and March. Scraping I consider to be of great importance, and would recommend all to practise the same. I think my orchard, previous to my purchasing it, never produced more than sixty barrels in a year.

In 1842, I had 45 barrels, (early apples not included.)

1843,	"	55	"	
1844,	"	186	"	
1845,	"	183	"	
1846,	"	116		(Russets failed.)
1847,	"	200	"	
1848,	"	130		(Russets failed.)
1849,				prospect very good.

The net income of my farm, since 1842, up to Sept. 1, 1849, is as follows:—

Two Wagons,	\$150 00
Buggy and Harness,	151 00
Horse,	120 00
Three Ploughs, Cart, and Wheelbarrow,	83 00
Haycutter, and Grindstone,	23 00
Water, brought in lead pipes,	50 00
Barn and sheds,	1,000 00
Cash paid for building Meetinghouse,	100 00
House,	2,500 00
Cash for Pear Trees,	25 00
Cash for Plum Trees, &c.,	5 00
Cash due and on hand,	791 00
One Cow,	20 00
One Piano Forte,	125 00
	<hr/>
	\$5,143 00

I had a partner, during the first five years, whose net income was about \$1,200.

The above I consider to be a correct statement of the amount

realized from nineteen and a half acres of land, and within the time specified above.

The amount paid out for labor and manure, on the whole farm, will not exceed \$200 per year, for the last three years. In 1847, the amount sold was \$1,750. In 1848, about \$1,200. In 1849, it will probably be from \$1,000 to \$1,200. I consider this year to be the most unprofitable one, for marketing, that we have had for twenty years; many of my crops have entirely failed, such as early pears, quinces, cabbages, &c.

SOMERVILLE, *August 27.*

Robert Chaffin's Statement.

My farm contains about one hundred acres, twenty-five of which are unimproved. The soil is loamy, and very full of stone. It is completely fenced with stone wall, a large share of which I have built, besides removing more than five thousand loads of stone into Fort Pond, and elsewhere, out of the way. (My farm is bounded on Fort Pond, over half a mile.) I have reclaimed about five acres of entirely worthless land, which now produces from two to three tons of good hay to the acre. I used no gravel for this purpose, not having any on my premises; but after sowing my grass seed, I pressed it down with a heavy roller, drawn by hand, in the spring and fall. It soon became swarded, so that I could cart my hay upon it, as well as upon upland. I have mown some of this land upwards of twenty-five years; every second or third year, it should be top dressed, and well harrowed with a sharp harrow, and rolled. My farm abounds with granite, of a fine quality, of which I make posts for gates, &c., which I find much cheaper than wood. I raise wheat, rye, oats, barley, and Indian corn, sufficient for the use of my family, with the addition of about two barrels of flour per year. I estimate my annual produce of potatoes at one hundred and fifty bushels; English turnips at three hundred bushels. I keep ten cows, two oxen, a horse, and some young cattle. I cut no poor hay, but have fodder enough to keep my stock, summer and winter. I sell no hay,

at present. I raise my own cows, and some to sell; I have raised four heifers the present season, and three the last. I keep the finest bull I can find, and raise calves from my best cows. I have an orchard of about two hundred and fifty apple trees, two hundred of which I raised from the seed, and they are now in a bearing state, all grafted with choice fruit. I have sold more than one hundred barrels in a year; this year I have not so many, and what I have are very wormy, which I attribute to neglect last year, in consequence of sickness of myself and family. I intend to set out another orchard, next spring. I have a peach orchard, of about two hundred trees, which have produced some beautiful fruit, this season. Among these trees are some nearly thirty years old, that are productive and healthy. I have also pears, plums, quinces, cherries, grapes, &c., &c.

Two years ago, I built a barn, sixty feet by thirty-eight, sixteen feet posts, rafters twenty-five feet, with a cellar under the whole, and three ventilators on the top. My cows are kept in the barn, during the nights, all the year round, and I keep four hogs in the cellar, to assist in manufacturing manure. Since last spring, I have composted over one hundred and fifty loads of manure, seventy-five of which are now ready to be spread on my grass lands. I consider one load of manure, composted in this cellar, worth three which has been exposed to the action of frost, rain, evaporation, &c. My cellar is close, excluding the frost and rain altogether. My barn is kept locked at night, to exclude strollers, who, I think, cause more fires than are caused by lightning.

The following is an estimate, according to a memorandum kept for several years past, of the profits of my farm, for one year:—

Stock, pork, butter, milk, poultry, fruit, &c., produced	\$1,000 00
Expended in cash, for laborers, farming tools, household affairs, taxes, repairs, &c., about	750 00

I calculate to improve my farm, to the value of from fifty to one hundred dollars a year, by laying over wall, reclaiming low land, setting out fruit trees, &c.

The original farm, thirty years ago, consisted of seventy-five acres, valued at about \$1500; the buildings were mere shells, without clapboards or paint; stock, two oxen, three cows, and one horse.

WEST ACTON, *September 7, 1849.*

J. D. Fiske's Statement.

My farm contains fifty acres. It came into my possession in 1842. There were no buildings upon the place at the time. I built my house in 1842, and my barn in 1843. My barn is forty by fifty feet, with a cellar under the whole. Being engaged, most of the time, during those years, about my buildings, I did not make much improvement upon my farm, which was then in an unproductive state, not yielding more than ten tons of hay, including the meadow. At that time, I kept two cows and a horse in the summer, and three cows and one yoke of oxen in the winter. Very little fruit of any kind grew upon the place. In 1845, I commenced with one acre of low peat land, which was then covered with a growth of wood, consisting of maple and birch. The wood was cut off, and the whole piece was turned over by means of a sharp bog hoe. It was planted with potatoes, the first year. The crop was one hundred and fifty bushels, which I sold, at that time, for forty cents per bushel. One man turned this piece over, in nine and a half days. This man I paid \$105, for a year. In the three following years, I proceeded to subdue six acres more, taking two acres per year, in the same way; the average yield, per acre, being one hundred and fifty bushels, which I sold at a price averaging from ninety-five cents to one dollar per bushel.

Most of this land is now laid to grass, and yielded, the present year, I should judge, about two tons to the acre. In addition to this, I have one acre which formerly produced nothing but bushes, and coarse, wild grass, which I have treated as follows, after digging a ditch through the centre, I proceeded to pare off the bogs, and otherwise make the surface as level as possible. I then carted on gravel, thrown out of my barn cel-

lar, and covered it three inches thick, giving it a dressing of manure, and sowing it to grass. This has yielded at least three tons per year, at the first crop. During the whole time I have owned my farm, I have purchased one hundred and forty dollars worth of manure; the remainder has been made upon the farm. The labor upon the farm has been performed by myself and one hired man, the year round, and another man, part of the year. About thirty-five rods of heavy wall has been laid, the past year. The produce of my farm, the past year, is as follows:—Thirty tons of English hay, two hundred bushels of grain, nine hundred bushels of potatoes, one thousand pounds of pork; milk, \$200; fruit, thirty barrels, beside enough for family use. I now keep five head of cattle in the summer, and fourteen in the winter. *No ardent spirit is used upon the farm.*

WALTHAM, September 8.

Edwin Wheeler's Statement.

The whole number of acres in my farm is about fifty, and improved the present year as follows:—About seven acres in English Grass; three and a half do. potatoes; three do. oats; two do. corn; one do. garden, &c.; half acre of turnip seed, (from which I had one hundred dollars worth of seed,) and about five do. pasturing. I have five or six acres of bank or brook meadow, and about eighteen acres of river meadow, two thirds of which is partially covered with cranberry vines; the whole producing but little hay, and that of the poorest quality, barely paying the labor of cutting it. The remainder of it is waste and woodland.

It is four years last January since I bought the place. The first year the receipts from the place, I think, were not one-half what they have been the past year. At that time most of the walls were half down, and hedged in on both sides with brush and brakes; these I have cleared up, and relaid most of the walls; about twenty rods this season. I have reclaimed about two acres of meadow and bank; the bank part was covered

with brush, the meadow bearing but little. I ploughed it in the fall of 1846, planted in 1847 with potatoes, manured with about twenty loads to the acre, and June, 1848, sowed oats and grass seed. After cutting the oats I spread, at the rate of about fifteen loads of compost manure, per acre. From this piece, containing one hundred and twenty-five rods, I cut, by estimation, two and a half tons of hay, this season, being the first crop. My mode of planting is, plough in the fall, to the depth of eight to ten inches, then roll it smooth, spread the manure in the spring, and plough it in about four inches deep. I plant my potatoes three feet apart each way, and corn three feet and three inches. I use some plaster.

When the land is suitable for corn, I plant the first year with potatoes, the second with corn, and seed it with grass seed at the last hoeing, making no hills. This way I think is better than to sow grain and grass seed. I have set about sixty apple trees and engrafted most of my old trees; these now bear some fruit. The last year I raised five hundred bushels of flat turnips among my potatoes, most of which I fed to my milch cows in the winter. I cut my poorest hay and mix with it a little rice meal, shorts, or some other kind of grain, giving them from one to two quarts per day each.

I have a cellar under my barn; part is used to house my sled, cart, wagons, &c.; the remainder for the hogs and manure; the bottom is covered with one and a quarter inch oak boards, laid upon clay, and is as smooth and solid as the barn floor, to keep the manure from leaching, and the hogs from rooting up the bottom; it is much better shoveling, and I think it better every way. From the products of the farm the last year, including eighteen dollars worth of grass bought in the field, and seventy-two dollars paid for corn and meal of various kinds, I have kept three cows, two swine, and one horse, for one-half of the year; the remainder, twelve cows, eight that gave milk, two oxen, two swine, and one horse, and had three tons of hay left over. The sales are as follows:—

Milk,	-	-	-	-	-	-	\$301 00
Potatoes,	-	-	-	-	-	-	215 00

Hay, - - - - -	136 00
Cranberries, - - - - -	55 00
Pork, - - - - -	31 00
Veal, - - - - -	27 00
Turnip seed, - - - - -	23 00
Oats, - - - - -	18 00
Poultry and Eggs, - - - - -	17 00
Straw, - - - - -	11 00
Turnips, - - - - -	6 00
	<hr/>
	\$840 00

The whole amount paid for labor the past year has not exceeded twenty-five dollars more than I have received for myself and team, exclusive of teaming wood in the winter, which has averaged about one hundred and twenty dollars per year.

CONCORD, Sept. 1.

From these statements, as well as from verbal ones made to the committee, it appears evident to them that farming should no longer be considered an unprofitable calling. No doubt some of the farms in the county yield less than the expense of cultivation; and perhaps are running their owners into debt. But the committee have evidence, which appears to them conclusive, that intelligence, skill and industry, will overcome many, if not all the disadvantages of soil and situation; and these are all that the farmers have to complain of; for all they raise beyond a sufficiency for the supply of their own wants, bears remunerating and often high prices. It is not believed that any farmer in Middlesex county will improve his condition by emigrating to California. Although the granite hills present a somewhat forbidding aspect, they are not without their value, while the rich bottoms that lie between them, and the luxuriant banks of the Charles and the Merrimack, the Concord and Nashua rivers, are incomparably more estimable than the whole valley of the Sacramento.

RECLAIMED MEADOWS.

There were ten applicants for the premiums on reclaimed meadows. The committee were highly gratified to perceive that so much attention has been given to this species of improvement. Some of the most valuable lands in the county are those which have been transformed by the hand of industry, from useless swamps to productive fields and meadows. There are still hundreds—perhaps thousands—of acres of these unsightly, and almost worthless tracts, waiting for the action of the spirit of improvement, and which, it is hoped will, at no remote day, be made to blossom as the rose, and to make glad the heart of man with the riches that can be gathered from their surface by cultivation. Several of the statements from the proprietors of farms embrace particular notices of improvements made in this department of Agriculture. The committee would have been pleased to award a premium to each of the applicants, had a sufficient number been placed at their disposal. They are confident, however, that those, to whom they can give no other testimonial of the society's approbation, than the mention of their names in this report, will find ample reward for their labor in the increased value of their land and its products.

William Rice's Statement.

The piece of reclaimed meadow to which I invite your attention, contains eight acres, with a depth of mud, varying from one to six feet. It was originally free from wood or brush, and produced meadow grass of common quality. The quantity of the last crop was about half a ton to the acre. Formerly, the only method by which the hay could be taken from the meadow was by poles. A ditch was dug around the meadow, and one through it, by which it was sufficiently drained. After being drained one year, it was ploughed by three men and three yokes of oxen, with a plough made expressly for ploughing bogs. Expense of ploughing :—

For the labor of three men, five days, -	\$15 00
Three yokes of oxen, - - - -	15 00
Total, - - - - -	<u>\$30 00</u>

The first year after ploughing, it was planted to potatoes, with a small quantity of manure—the second, without any manure. It was sowed down in the month of September, and yielded the present year, two tons of English hay to the acre, which is the first crop of the same taken from it.

CONCORD.

Abel E. Bridge's Statement.

In 1846, I purchased a tract of land in Lexington, containing about nineteen acres, consisting of swamp, meadow, and upland; that part of this tract which I requested you to examine, is a piece of swamp land, containing four acres, from which a growth of wood was taken five or six years since. In the summer of 1848, I cut a ditch four feet wide around it, and in August commenced clearing, it being filled with roots, stumps, and underbrush. I cut around the stumps, and then with a lever upturned them. After remaining a sufficient time to become dry so as to burn freely, they were burnt, together with the underbrush. On two acres, I carted twenty-five loads of gravel in the winter, which was of no expense, as I was obliged to remove the gravel in consequence of digging a cellar. In April I sowed it down with herds-grass, red top and clover-seed, at an expense of two dollars. I cut four tons of hay as per estimate in July, and there is considered to be one ton to the acre at this time.

Both crops valued at - - - -	\$60 00
Deduct seed, - - - - -	2 00
Balance, - - - - -	<u>\$58 00</u>

On the other two acres I planted potatoes, at the following expense :—

Two cords of manure, - - - -	\$12 00
Twenty bushels of seed potatoes, - -	20 00
Twenty-five days' work in planting, hoeing and digging potatoes, at \$1 per day,	25 00
	<hr/>
	\$57 00

There is a yield of potatoes, averaging from seven to fourteen hills to a bushel, which will make not less than four hundred bushels, at fifty cents per bushel, - - \$200 00

Deduct expense of seed, &c., - - - 57 00

\$143 00

Income from hay, 2 acres, - - - - 58 00

Income from the 4 acres, - - - - \$201 00

The first cost of the land was twenty-five dollars per acre, and the cost of clearing, (by contract,) fifty dollars per acre, the whole expense, seventy-five dollars per acre, - \$300 00

You will perceive, that I consider the income from the four acres, which, in its present condition, cost three hundred dollars, to be two hundred and one dollars.

In addition to the four acres, I have eight acres now nearly cleared, which I intend to plant the ensuing spring.

LEXINGTON, *September 8th*, 1849.

Charles Gerry's Statement.

The piece of bog meadow, I requested you to examine, contains about seven acres, surrounded on three sides, with more elevated land : bottom, meadow soil, from two to four feet deep, on clay subsoil ; it was covered three years ago, with a thick coat of moss and water bushes. I dug, in 1847, a ditch around the whole piece, and cross-ditched, so as to sufficiently drain the whole piece, which has materially helped to improve the adjoining land. In 1847, I ploughed four acres, by the use of cart wheels, having the plough so hitched to the axletree as

to let the oxen travel on the unploughed part. I planted the four acres in 1847, with potatoes, and had four hundred bushels of good marketable ones, and one hundred small, for the cattle, and applied one cord of wool waste in the hill per acre. In 1848, sowed one acre with oats and grass seed. I had a large crop of oats, planted the remainder of four acres, partly with corn, and partly with potatoes. I had seventy bushels of sound corn as I ever raised, of a Canada kind, the potatoes yielded as well as the first year; applied twenty-two cart loads of compost manure per acre.

After taking off the corn and potato crop, I seeded the three acres with grass seed, and have had from four acres, as follows :—The first acre, sowed in the spring of 1848, two tons of good hay, and a ton and a half per acre on the remainder, the first mowing. I shall have a good crop of rowen. The remaining part of seven acres I had turned by a spade, at a cost of six dollars per acre, and the board of a man. I brushed the piece with a brush harrow, and planted the whole with potatoes. I have dug, from these three acres, this season, and sold two hundred bushels of marketable potatoes; shall have one hundred more, beside the small ones, which will amount to one hundred more. I applied one cord of wool waste per acre. The seven acres were not worth ten dollars per acre before reclaimed; are now worth as much as the best of land.

SUDBURY, *September 11th*, 1849.

Stephen Morse's Statement.

The peat, or bog meadow, to which I called your attention, consists of about six acres, that has been reclaimed in the following manner :—In the fall of 1841, I commenced by cutting a ditch through the centre, and then by cutting border ditches, until the whole piece was thoroughly drained. A part of it was covered with gravel and sand, a part with the mud taken from the ditches and manured with twenty loads of compost manure to the acre, and the remainder (being the greater part) was bogged and burned, and the ashes made from the turf

spread upon it, without any other manure. This last method is far the cheapest and most economical mode I know of, for reclaiming peat meadows. The whole expense of bogging, burning, manuring, and seeding, being not more than twenty-five dollars per acre. The lot you saw, that was prepared since haying by burning, is now completely green with herds grass and clover, and will, without any doubt, yield three tons of the best of hay to the acre, the next season. I do not deem it advisable to sow grass seed after the first of September.

The first and second crop on the whole of the meadow this year, has been greater than in any former season, I should judge, between three and four tons to the acre. Many of the ditches I am now filling with stones, to within six inches of the surface, in order to have it more convenient for passing from one part of the meadow to the other. I also intend this fall, to put in a flume at the outlet of the meadow, so that, when there is a freshet, I can throw the water over the whole meadow, and keep the water in the ditches at what height I please. In 1841, the quality of the grass upon this meadow was very poor, and teams could not pass over it; now the quality of the hay is first rate, teams can pass over it, and it is altogether the most profitable land on my farm.

MARLBOROUGH, *September, 1849.*

Elbridge G. Hayden's Statement.

The piece of reclaimed meadow which I offer for premium, was gravelled in September, 1847. Previous to that time, it had been mowed to keep the bushes down, but was in a very uneven state, and bore but a small crop of poor meadow hay. It was ditched by four ditches, one running by the shore, to cut off the springs, and the other three, from the shore to the brook. I carted on, in September, 1847, about seven hundred loads of gravel on the piece, (which contains about one acre,) and seeded it down without manure. The next year I cut a moderate crop, perhaps one and one-half ton per acre. In the fall of 1848, I spread on thirty loads of good strong manure,

from my barn cellar, and passed a brush harrow over it ; this year, the crop was very heavy ; it was secured before a witness and placed by itself, and measures on the scaffold's, over three thousand cubic feet.

CONCORD, *September*, 1849.

William Parker's Statement.

The piece of reclaimed swamp, to which I ask your attention, is in the town of Stow, and contains two acres, nine rods, including ditches. It was formerly considered worthless, and as it is within one hundred rods of my paper mill, I should have been willing to have given the land, and paid a handsome sum to any one who would have agreed, to make it look as it now does. It was filled up with alders, and dogwood, and I kept it in this state about nine years, and all I obtained from it, during that time, was six and a half bushels of cranberries, all of which were got in one year. After I had cut the brush off there was no outlet to it, and a greater portion of the year, a man could not with safety, go through it. I commenced about eight years since, by putting two Irishmen at work upon it, to cut a drain, which they accomplished in a couple of days. One of them came to me, and said there was "as good peat in that bog, as there was in Ireland." I asked him if he could get some out, and his reply was, "get me a knife, and I will show you cords of it in a short time." I did so, and he cut out thirty cords and dried it fit for use, although it was the first of September, which proved to be worth one dollar per cord more than wood, to burn under our steam boiler, to dry paper with.

Wood at this time, was worth four dollars per cord. Every year since, we have commenced in season, and have cut out two hundred cords of peat, which we prefer to wood for our use. From these two acres of land, I have cut and burned, in four years, over seven hundred and thirty-five cords of the best peat I ever saw, the most of which I had got out and cured on contract, for one dollar per cord, and all the top part thrown in

and levelled down, leaving proper drains to carry off the water. Some of it, we cut from six to eight feet deep; we cut the peat as low as we find it good, and leave the rest. On one-third of this land, we cut down to solid gravel, and rocks like the bottom of a river, so hard that the spring water cannot work through it, and of course, must be drained off. The deepest soil now, is the remains of poor peat, not worth cutting, which, with the top-dressing and gravel, and compost manure, leaves a good soil, from three to six feet deep, that will never wear out, if properly managed.

The most of the soil on this land, has been handled over with spades, and a good share of it twice and three times, as it could not be ploughed. I carted on over one hundred loads of gravel to the acre, the most of which, we had to carry on with wheelbarrows, after carting as near as we could to the edge of the swamp; this was done by a platform of boards and plank, which we moved as wanted, from place to place, until the whole was covered about three inches deep. This was done in the fall, and in the spring spaded it all over to mix it with the soil. Then (1847) planted it with potatoes, manuring in the hill; they looked well, but the rot ruined two-thirds of them.

I considered I obtained enough to pay for the seed and labor, as they sold, from sixty-five to seventy cents per bushel. In 1848, I sowed one part with oats and grass seed, spreading on twenty loads good compost manure, and obtained a good crop. The other part I planted with potatoes, again manuring in the hill, and had a fine crop, entirely free from rot. In 1849, top-dressed this with twenty loads of good compost manure, and sowed oats and grass seed, and obtained an excellent crop of oats, and two good crops of hay, from the piece laid down in 1848. Annexed, is a statement of all the above crops. I did not keep an exact account of the seed and labor, but I shall charge all that it cost. The most of the grass seed sown on this land, was chaff saved in my barn, of which, I have about as much as I want every year, and for the most part, it does better than that which I purchase; still, I prefer cutting my hay before the seed is ripe, but cannot always do so.

SWAMP LAND.			Dr.
For 2 acres 9 rods of land, valued, say,	-	-	\$25 00
" Cutting 6 cords maple wood,	-	-	3 00
" Cutting and curing 735 cords peat, \$1 per cord,	735	00	
" 2 men, 1 pair oxen and 2 carts, carting 200 loads of gravel and spreading the same,	-	27	00
" 50 loads good compost manure,	-	-	50 00
" Oats and grass seed,	-	-	5 00
" Seed potatoes, 1 acre,	-	-	5 00
" Preparing land, sowing and planting crops, and harvesting the same 2 years,	-	-	30 00
			<hr/>
			\$880 00

CONTRA.			Cr
By 6 cords maple wood,	-	-	\$ 24 00
" Sale of brush in payment for cutting the wood,			3 00
" 735 cords peat, at \$4 per cord,	-	-	2,940 00
1848 27 bushels oats,	-	-	13 50
" 4000 lbs. oat straw, sold at \$10 per ton,	-	-	20 00
" 88 bushels potatoes, at 75 cents,	-	-	66 00
1849 3½ tons hay, two crops, sold at \$15 per ton,	-	-	45 50
" 120 loads peat mud for manure,	-	-	60 00
" 32 bushels Bedford oats,	-	-	16 00
" 2½ tons straw on hand,	-	-	20 00
" 2 acres 9 rods reclaimed land, valued at	-	-	400 00
			<hr/>
			\$3,608 00

SUDBURY, September 5th, 1849.

Willard Maynard's Statement.

The acre of reclaimed land I offer for premium, is a part of a wooded swamp of thirty acres. In January, 1848, a growth of large pine and maple, with smaller trees of black birch and ash, and a thick underbrush of alder and dogwood, was cut from it. The brushwood was cut clean for convenience in

chopping and hauling the trees, and was burned on the ground in May. Two sets of Irishmen, used to paring meadows, came to look at it, but expressed themselves *afraid* of the stumps. One set offered to cut up the surface for eighty dollars, and the use of oxen to pull out the stumps and large roots. When told that the soil was miry and could be entered upon with no other team than a horse wearing rackets, they declined the job entirely. The other set offered to venture upon it for one hundred dollars. I cut the acre in August, without the assistance of Irish labor, and found an average day's work to be four rods, leaving the stumps of one foot diameter and larger, but chopping the roots close from the same, so that they were afterwards easily turned over with a lever. I reckoned labor and board one dollar per day. The expense of piling up and burning the turf and small roots, piling the large roots and sunken trees, and carting off, turning over the stumps and sledging them off in winter, together with levelling the surface, was forty dollars. A ditch was dug on every side, but the muck taken therefrom paid for that. The soil is not peat, but a muck of decayed wood and leaves, varying in thickness from one to ten feet, resting on a subsoil like the adjoining upland, of coarse gravel and stones. The cost of the acre when cleared was as follows, viz:—

Value of land for growing wood, ten dollars per acre,	\$10 00
Paring the surface with bog hoes and axes,	40 00
Burning, clearing of stumps, wood, &c.,	40 00
Burning brush before paring,	1 00

Whole cost,	\$91 00
Credit.—Value of large roots and old wood,	20 00

The stumps are worth cutting and splitting for fire-wood, and no more.

This leaves \$71 as the cost of the land cleared and levelled, ready for a crop. I planted potatoes this spring, thirty hills to a rod. The roots grew near the surface, and were considerably injured by the excessive heat and drought of July. The crop, however, is one hundred and sixty bushels to the acre, one

hundred and twenty of which, are of good size and quality, and forty refuse. The expense of planting, hoeing and digging, will amount to nine dollars, ten bushels of second size potatoes for seed, five dollars; this added to seventy-one makes eighty-five dollars, forty bushels of small potatoes for feeding hogs, at fifteen cents, are worth six dollars; leaving a debt of seventy-nine dollars. The one hundred and twenty bushels of marketable potatoes, must be worth at the meadow after digging, sixty cents per bushel to balance this. Present prices are considerably lower, and if they continue, it will require a part of next year's crop to make up the deficiency. I think wooded swamp land can be reclaimed more profitably, than wild-grass meadow. Two or three good crops of potatoes may be obtained with little labor and no manure, and the grass afterwards will be better than on land from which the crop has been taken for many years, and nothing returned.

SUDBURY, *Sept. 3d*, 1849.

FRUIT TREES.

Although the season has been unfavorable to the production of fruit, there seems to have been no relaxation in the cultivation of trees. There were eleven applications for the premiums on the different kinds of fruit. One of these came from Abel B. Heywood, of Concord, whose apple orchard was in good condition; but having been planted *before* the year 1837, was thereby excluded from competition. For a similar reason, the peach orchard of E. Hutchings, of Westford, did not come within the rule for governing the decisions of the committee,—it having been planted before the year 1846.

William Buckminster, of Framingham, offered for a premium, a peach orchard, containing between two and three hundred trees, on an acre and a quarter of ground. They were set in April, 1847, on land not manured, but since planted with beans between the rows of trees. Last spring, a shovel full of leached ashes was put about the roots of each tree, which, Mr. Buckminster is confident, has a tendency to keep the mother fly

from depositing her eggs at the root. No borers, nor any effects of their operations were discovered in the orchard, and not more than three or four trees, were seen to have thrown out any gum. Some of the trees were budded, and others were seedlings from good fruit that needed no budding.

Calvin Weston, of Lincoln, has one hundred apple trees, and the same number of peach trees, set in alternate rows, on an acre and a quarter of ground. He received a premium on his apple trees, in 1847. The peach trees were set out in 1846. The soil is a gravelly loam on the easterly side of a hill. He has used no other manure than about a quart of wood ashes to each tree. Many of the trees are now in fruit.

Charles Twitchell, of Ashland, has *three* thousand peach trees—about half of them set where he designs them to remain—the rest are in a nursery, and are of two and three years growth. About six hundred of his trees were set in 1844 and 1845, and are now in fruit. The other nine hundred, which he offered for a premium, were set in 1846, 1847, and 1848. They are set in rows twelve feet apart, and ten feet from each other in the rows. Part of the soil is a deep, dark loam, another portion is a yellow, sandy loam, and another is principally gravel. Potatoes were planted between the rows, the first year after the trees were set. Since then the land has been kept light, and free from weeds by ploughing and hoeing. No manure was here used, except ashes. As to insects, Mr. Twitchell says they have never troubled him, and therefore, he has nothing to say concerning them. The committee were highly pleased with the appearance of these orchards. The trees were all remarkable thrifty and clean. The ground was entirely free from weeds, and raked to a beautiful smoothness.

William Stone, of Natick, offered his peach orchard for a premium. As his mode of cultivation differs from that of all others, which the committee examined, his statement, which was verified by the committee on examination, is appended in full to this report.

Simon Tuttle, of Acton, offered his apple and peach trees for a premium. His apple orchard contains ninety trees, set in April, 1839, on a hard and rocky soil, which has been ploughed

and planted for the last five years. He has been troubled with no insects but the caterpillar, which he has thoroughly brushed away. The peach orchard, which he proposed for a premium, is on rather a light rocky soil, with some gravelly knolls, which he has kept cultivated, in part, by raising seedling pears, peaches, cherries, plums, and apples; the other part has been planted with corn and beans. The orchard contains about six hundred trees, raised from seed, planted in 1846 and 1847. The trees were set in the orchard the last of October, 1847. This year some of them have borne fruit. Mr. Tuttle says he has had some trouble with ants on his peach trees, which he has been able to control.

Schuyler Parks, of Lincoln, offered for a premium, his apple orchard of eighty trees, set in 1843. The land has been ploughed and hoed, and the trees have been washed with ley every year, in the month of June. The same gentleman proposed his peach orchard of one hundred and forty trees, set out in 1847—all budded fruit, from New Jersey and Long Island nurseries. No manure had been applied.

J. O. Freeman, of Framingham, proposed his apple orchard for a premium. It contains about two hundred trees, which were placed in their present position at three different times, namely, in 1844, 1846, and 1848. The first lot, containing sixty-four trees, was planted the first year with corn, then, successively with corn, potatoes, barley, clover, and corn. On the second portion has been grown corn, potatoes, spring rye, and corn. The other was planted last year with potatoes, and the present year with corn. The trees were all planted on sward land, that was ploughed in the fall before planting. The holes were made three feet in diameter, and two feet and a half deep. In each hole was put a quantity of peat, mixed with the sods. The ground has since been manured at the rate of forty cart-loads to the acre,—the manure composed of peat mud, with ashes and manure from the barn-yard. In the fall, a bushel of this kind of manure has been placed about the root of each tree. In the month of May, they have been trimmed and washed with a solution of potash. The committee observed that all the trees in this orchard had been trimmed and trained

agreeably to the favorite system of Benjamin Wheeler, Esq., a mode, which, in the opinion of the committee, contributes greatly to beauty, in the shape of the tree, and to convenience in cultivating the ground.

J. W. Brown, of Framingham, offered his apple orchard for a premium. His statement, circumstantial in its details, contains facts and suggestions, that will be useful to the cultivators of fruit.

Marshall S. Rice, of Newton, has an apple and a peach orchard, both of which he offered for a premium. Mr. Rice's statement, concerning his mode of cultivation, destruction of insects, &c., contains so much information that may be important to fruit cultivators, that the committee would not perform their duty to the society and the public in general, unless they presented it as part of their report.

Charles L. Tarbell, of Lincoln, presented his apple, peach and pear trees, for the premiums on those productions.

The committee required of all the applicants, statements in writing, of the soil, mode of cultivation, and treatment in regard to insects. It will be seen, by their several statements, that, in most instances, the requisition was complied with.

Charles L. Tarbell's Statement.

The trees I offer, are on a black, loamy soil, with yellow loam for subsoil. My apple trees, one hundred in number, were set in the spring of 1844, in rows thirty-three feet by twenty-four. In setting, holes were made to the depth of one foot, by three feet diameter, and the subsoil made loose twelve or fifteen inches; we used no manure about the trees when setting, filling the holes with the soil taken out. The land has been ploughed every year, and planted with corn or potatoes, and manured, twelve to fifteen ox cart loads broadcast to the acre.

The trees have never been washed, except in a few instances, where I discovered the tree *lice*; the wash used, was whale oil soap suds; they have been kept free from moss by rubbing when wet, with a grass sod.

My peach trees, one hundred and twenty in number, were set in the spring of 1847; cultivation, the same as the apple trees.

My pear trees, forty in number, were set in 1838, and intermediate years to 1847; their cultivation has been similar to that of the apple tree, except a more free use of manure.

LINCOLN.

J. W. Brown's Statement.

I purchased the lot of land where my orchard now stands, containing six acres, in the autumn of 1846.

It was a worn out, fallow field,—had not been ploughed for fifteen years, and at the time of purchase, afforded pasturage for one cow only a part of the season. The soil is generally a warm, sandy, or gravelly, yellow loam, with a sandy, or gravelly subsoil. The close of each warm season usually found this field an almost barren plain.

The field is now well fenced. It has been twice ploughed, and a part of it has been cultivated and manured lightly. The next year, the whole field will be well cultivated.

The holes for the trees were dug of circular form, six feet in diameter, and eighteen inches deep, in the fall of 1846.

Owing to the warmth and lightness of the soil, I set the trees in rows, twenty-four feet apart each way, they should have been thirty feet apart.

The trees were set in the spring of 1847, and this is the third summer of growth in their present situation. At the setting, the holes were partly filled, by spading in around their sides; the trees were then set, and the holes were filled and levelled up with a mixture of peat, loam, unleached ashes and compost from the barn yard. (Sixty ox-cart loads of peat, thirty horse cart loads of compost, and one hundred and seventy-five bushels of dry ashes.)

The trees have been kept hoed, and have each year received a top-dressing, composed of a mixture of peat, compost and leached ashes. They have received but one wash, and that this sea-

son, in the form of one and a half pounds of potash in a pail of about nine quarts of water. This is as strong as young trees will bear without injury.

The orchard contains four hundred and seventy-five trees. two hundred Baldwins,—one hundred greenings,—forty Porters and one hundred and thirty-five of several varieties, such as Hubbardston nonsuch, yellow bell flower, Lyscom, winter pearmain, Hertfordshire pearmain, English quince, early and Brownal Spitzenburg, russet, pippin and several varieties of sweetings.*

My trees have suffered exceedingly from the excessive drought of the past season, and have grown but very little since the 15th of July. They have made of growth, the past season, from twelve to thirty inches. The average growth may be safely set at eighteen inches.

The great dryness of the past summer, and the consequent lack of growth, caused me to hesitate about offering the orchard for premium this year, but as I shall be absent from the State next year, I wish it now to take its chance as best it can.

FRAMINGHAM, Aug. 23, 1849.

Marshall S. Rice's Statement.

My apple trees, eighty in number, were taken from a nursery which I reared, and budded while small; they were set in the orchard in the spring of 1838. The soil is a dark gravelly loam. The orchard was in grass a part of the time the first five years after the trees were set; a part of the seasons it was planted with corn and potatoes. For the last five years, having learned the importance of cultivation among trees, I kept the ground ploughed, raising corn and potatoes alternately on a part of the orchard; carrots on a part, and strawberries on a part. That part occupied by strawberries has not been ploughed for two years, and the trees on that part, this season, show the need of ploughing, not being so vigorous there as elsewhere. I have never manured the orchard highly. I go over the

*The trees, at the time of setting, were one, two, and three years from the graft.

orchard once a year with a scraper, and take off any rough bark I can see, (though not much has yet formed,) to remove all harbors for those eggs which produce the borer, the worst enemy to our apple orchards. I look my trees over usually twice a year for borers; in the spring and autumn; but I find only a very few, since I have scraped my trees thoroughly, either in this young orchard or in my old one. I find that the borers do not usually, the first year, penetrate any more than through the bark, and can be extricated with a pen knife; whereas during the second and third year of their depredations, they are often found far from the place of entrance and in the hard wood of the tree. These facts I have gathered from my old orchard, not having had much trouble in my new, from these intruders. A number of years since, I declared a war of extermination upon the common caterpillar, and do not mean to allow one family of them to arrive at wormhood on my farm; and am confident that I have succeeded, at least, so far as this young orchard is concerned. My method of destroying them is to go among my trees soon after they hatch, either very early in the *morning*, or about *noon*, in a sunny day, or when the branches are *wet* with rain, and take from the branches, with my hands, all the nests with all the occupants, and stamp them into the earth; I usually get nearly all the first time going over; the remainder the second time. The fall caterpillars that so deface the beauty of our trees, I find rather more difficult to destroy than the others, as they do not gather into so close quarters, but I have a deadly hostility to them likewise, and calculate to destroy them by cutting off the leaves which contain them, and then killing them as I do the others.

I trim a little every year, preferring to do this work alone myself, taking out small limbs not wanted to make a handsome top; and thus avoid the necessity of cutting off large limbs which sometimes proves disastrous.* Last year many of my trees in this orchard bore very nice fruit; some of them so abundantly as to need propping. This year, this orchard appears like most others in this vicinity, rather destitute of fruit.

*I usually wash my trees in the month of June with potash water.

The peach orchard consists of two hundred and thirty-eight trees, mostly set in 1846 and 1847,—a few in 1848. The orchard is on the northerly side of a small hill. The soil is a dark gravelly loam. I have kept the land cultivated since the trees were set out, raising principally corn and potatoes, alternately, in the orchard. The soil has been manured but moderately. I examine the trees twice a year to destroy the peach worm, but a few of which however have made their appearance. In the autumn of 1847, observing some of my peach trees look feeble, and give indications of the "yellows," and hearing, or reading, that chamber-ley was good to cure that malady, I hollowed the earth around each tree, early in the autumn, and during the autumn and winter I had about a gallon of it turned around each. I tried one sickly tree, earlier in the season, with manifest advantage in my opinion; and I believe it has had a good effect on my orchard generally. My trees were bountifully supplied last autumn, with buds for blossoming, but only those on the highest ground showed the petals last spring; consequently only on the highest ground have I fruit this year. I trim the trees a little in June; taking off such limbs as prevent getting near the trees with a plough, such as, by being taken off will serve to balance the tree, and such as can be spared where the limbs are too thick.

NEWTON, Aug. 28th, 1849.

William Stone's Statement.

The subscriber offers his peach orchard for a premium, containing about one thousand trees, in good and thrifty condition, in a bearing state, set three years last April. Situated in the west part of Natick. Said orchard is set on high land, one hundred feet above the level of the plain below, on a deep yellow loam, very full of good wall stone; the natural growth, oak and walnut; dug out the stone; what we could not pry out without blasting, were drilled and blasted, so that the soil was ploughed almost as easy as though there never had been a stone on it; found stone in great plenty to make a good and

substantial wall, enclosing three acres on which the orchard stands. In June, 1843, ploughed the land, in the first week in September, cross ploughed, gave it a good harrowing, sowed on winter rye, harrowed it and cross harrowed, and by this time you will suppose it was well broken up. July, 1844, gathered a fine crop of grain; as soon as the grain was off, ploughed in the stubble. In the spring of 1845, as soon as the frost was out, ploughed; found stubble all decayed; harrowed down the furrows; with my horse and plough, marked it out in squares ten by twelve feet. Set the trees at the crossing. Myself and two hired men, took out of the nursery seven hundred of the trees, and set them out in one day, and only twelve failed. The rest lived and grew as well as I could wish to have them.

MANNER OF PRUNING.—I remove all dry limbs, and all limbs that interfere or in any way hinder the growth of the tree. I do not plough, hoe nor cultivate among my fruit trees, because I think it much better, and it makes the fruit larger, and is cheaper, to cover the whole surface of the ground with straw, meadow hay or litter of some kind. Well covered in this way, it will last two years, and the trees will have less worms and flourish better than to cover the land with manure of any kind. I place about a peck of hard coal or wood ashes, at the root of every tree once a year, and it has not failed to keep away the borer.

The reasons I give in favor of straw and hay as preferable to compost manure are, it saves labor, is cheaper, it prevents the drought from penetrating as it would without it, and in case the trees stand on a side hill it keeps the rains from washing the soil, and when the fruit drops, it keeps it clean. I have tried this course for twelve years, and am fully satisfied it is the best.

NATICK, *Aug.* 1849.

CRANBERRIES.

In the year 1848, the trustees of the society offered a premium to encourage the cultivation of cranberries, a species of

fruit, which has become an important article of exportation, and to the raising of which, large portions of the soil of Middlesex county seem to be peculiarly adapted. As the funds of the society were not sufficient to justify the offer of a larger premium than *ten* dollars, one of the trustees,—N. J. Wyeth, Esq.,—with characteristic public-spirited liberality, immediately contributed *forty* dollars, thus making the premium *fifty* dollars, “for the largest quantity of cranberries raised on four square rods of ground.” It was expected that so generous a premium would excite some competition; but that expectation has not, hitherto, been fulfilled. In 1848, the committee were invited to examine the ground of one applicant for the premium, which, in their judgment, was entitled to no consideration whatever. One, and only one, application has been made the present year. The committee, acting in correspondence with that rule of the society, which permits them to withhold premiums for any given object, when there is no competition,—rejected the claim, but have awarded a gratuity of *five* dollars,—although the plantation examined afforded rather more evidence of intelligence on the part of the proprietor, than that which they examined in 1848. Annexed, is the statement which accompanied the application for the premium.

Sylvester Reeves's Statement.

The following is a statement of the course pursued in cultivating the cranberry vine. The soil is a sandy loam,—subject to high floods from the river,—was ploughed a number of years since,—the soil being left very uneven, irregularly in heaps, as was usual in breaking up new land, and in that state left to sward over. In 1841, I commenced placing the vines out, by cutting with a spade the sods ten inches square, with two or three inches of the soil attached, first removing from the meadow, sods of the same dimensions,—taking particular care that each sod of vines, should come in *contact* with the soil of the meadow, and even also with its surface.

The vines began to spread gradually, notwithstanding the sods were surrounded with grass.

In 1843, I also placed some vines upon the heaps or raised spots,—they grew at first thriftily, but turned yellow in dry weather.

In 1845, I removed the soil from the depth of six to eighteen inches, reducing the surface to a more uniform level, placing the vines out in the sub-soil in the same manner, and of the same dimensions as in 1841, the sods being at the distance of from eighteen to twenty-four inches apart.

These vines covered the ground the third year, where the sub-soil was mellow and loose, without any farther labor; but where the soil was hard and mixed with small lumps of iron ore, their growth was more retarded.

In 1848, I selected the most productive part of the ground, raked and measured four bushels, from four square rods. They are not so productive the present season, owing to the dry weather, and a light frost we had the 16th of July. This ground is so situated, that it can be flowed winter and spring.

I have raked and measured, two bushels of cranberries, from four square rods, on the ground which you examined the 6th of September. These facts are presented, contending for the premium offered by the society, for the cultivation of the cranberry vine.

WAYLAND, *Sept.* 1849.

Unwilling that injustice should be done to any applicant for the bounty of the society, the committee thought proper to consult the judgment of others in regard to this matter; and as the premium is derived chiefly from the contribution of an individual, it was supposed that the views of that gentleman might, with propriety be solicited. Accordingly a note was addressed to him by the committee, inclosing the statement of the applicant for the premium, to which, the following reply has been received:—

CAMBRIDGE, *Sept. 17th*, 1849.

JOSEPH T. BUCKINGHAM, Esq. :

DEAR SIR,—Your favor of the 12th was received in due time, and inclosing the application of Sylvester Reeves for the cranberry premium.

The object of the premium is to elicit an improved method of cultivating the cranberry,—how far the method of Mr. R. answers this end, or comes within the terms of the offered premiums, the committee must judge.

To my mind, no experiment instituted before the existence of this premium should be rewarded by it, inasmuch as the public would have had the benefit of them without its existence—and the experiment detailed by Mr. R. seems to me nothing new, as it had been adopted by others, nor does it appear to me to be a case of cultivation, as merely setting out or planting is not properly cultivation, but only its first step.

Should the committee decline to award the premium, I would recommend a revision of the offer, defining more nearly what is meant by cultivation, and giving three years for the experiment, as it takes about that time to raise from seed, or to propagate by roots.

Very respectfully, your obedient serv't,

NATHANIEL J. WYETH.

After giving deliberate consideration to the numerous applications for premiums, and a careful and laborious examination of the premises proposed, the committee have awarded the premiums, and gratuities, as follows :—

FARMS.

W. Buckminster, Framingham,	1st premium,	\$25 00
E. A. & A. Lawrence, Pepperell,	2d “	20 00
Daniel Weston, Lincoln,	3d “	15 00
John Gordon, Brighton,	4th “	12 00
N. P. Morrison, Somerville, gratuity,		5 00

RECLAIMED MEADOWS.

Wm. Rice, Concord,	1st premium,	-	\$15 00
A. E. Bridge, Lexington,	2d " -	-	12 00
Chas. Gerry, Sudbury,	3d " -	-	8 00
Stephen Morse, Marlborough,	4th " -	-	5 00
E. G. Hayden, Concord, gratuity,	-	-	6 00
Sylvester Reeves, Wayland, cranberry meadow, gratuity,			5 00

APPLE TREES.

Chas. L. Tarbell, Lincoln,	1st premium.	\$15 00
J. O. Freeman, Framingham,	2d " -	12 00
J. W. Brown, Framingham, copy of Emerson's Forest Trees.		

PEACH TREES.

Chas. Twitchell, Ashland,	1st premium,	\$10 00
Calvin Weston, Lincoln, copy of Emerson's Forest Trees.		

PEAR TREES.

Charles L. Tarbell, Lincoln,	1st premium,	\$10 00
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Jos. T. BUCKINGHAM, *Chairman.*

PLOUGHING—SINGLE TEAMS.

The committee, (Richard Barrett, of Concord, chairman,) reported the following awards :

To Elijah Wood, Concord, Ruggles, Nourse & Mason's

plough, Eagle 20,	-	-	1st premium,	\$10 00
To J. B. Moore, do. do. do.	2d	do.		7 00
" Henry Brooks, Acton, do. do.	3d	do.		6 00
" Andrew Conant, Concord, do.				
R. N. & M's plough, Eagle 2,	4th	do.		5 00

This committee was called upon to examine the team, plough and work of A. W. Putnam, of Lexington, on the meadow near by. His team of three horses was on *rackets*,—plough, R. N. & M's.—and the work was well done. The committee recommend that he receive a gratuity of \$6 00.

MILCH Cows.

Among other premiums awarded on milch cows, was one of \$8 00, to Peter Lawson, of Dracut, for his Ayrshire cow.

Peter Lawson's Statement.

The following is a correct account of the measure and weight of the milk of my cow "Beauty," during the month of June.

	Morning.	Noon.	Night.	Total.	Morning.	Noon.	Night.	Total.
	Qts.	Qts.	Qts.	Qts.	Lbs.	Lbs.	Lbs.	Lbs.
June 2...	10	8	6	24	.	.	.	.
" 3...	9	5	6	20	.	.	.	.
" 4...	9	9	7	25	.	.	.	.
" 5...	8	7	6½	21½	.	.	.	.
" 6...	9½	8	6	23½	.	.	.	.
" 7...	9½	8½	6½	24½	.	.	.	.
" 8...	9	8	8	25	.	.	.	.
" 9...	10	8	8	26	.	.	.	.
" 10...	11	8	7	26	.	.	.	.
" 11...	10	8	8	26	.	.	.	.
" 12...	8½	9½	7½	25½	.	.	.	.
" 13...	10	8½	8	26½	.	.	.	.
" 14...	9½	8	7½	25	.	.	.	.
" 15...	10	8½	7½	26	.	.	.	.
" 16...	10	10	8	26½	.	.	.	.
" 17...	8	9½	6	24	.	.	.	.
" 18...	10½	8½	8	28	21½	19½	16	57
" 19...	11	8	8	27	21½	16	15	52½
" 20...	10½	9	7½	26	22½	17½	16	56½
" 21...	10	7	7	26	20½	18	14	52½
" 22...	10	7	6½	23½	21½	15	12½	49
" 23...	10	6	7	24	19½	13½	15	46½
" 24...	10	8	7	25	20	11½	15	45
" 25...	10	8½	8	26	20½	16½	16½	52½
" 26...	10	6½	6½	24½	20½	15½	12½	47½
" 27...	9	6½	6½	22	18½	14½	13½	46½
" 28...	9½	6½	8½	24½	18	12½	17	47½
" 29...	9½	7½	7	24	19	14½	13½	47½
" 30...	9½	7½	7½	24½	20	16	14	50
29 days,	280½	228	216½	725	.	.	.	.

BUTTER.

There was awarded for Butter :—

To Ephraim Sawtell Groton, 1st premium,	- \$3 00
William Farrar, Carlisle, 2d “	- 2 50
Nathan Brooks, Acton, 3d “	- 2 00
Geo. K. Carter, Billerica, 4th “	- 1 50
Henry Holden, Acton, 5th “	- 1 00

But as in no instance, did the competitors comply with the printed rules of the society in furnishing certificates, the committee recommend that the premiums be withheld until the regulations be complied with.

Ephraim Sawtell's Statement.

I keep five cows, and have given them, during the summer, half a pint of salt apiece, weekly. They have had recently nothing more than their usual feed, excepting a few stalks of southern corn. My milk is strained into cold tin pans, and placed on the shelves of a milk room, (situated on the north side of the house,) having a brick floor and plastered walls. It communicates with a cellar beneath by a stairway, which renders it a cool room in summer. At this season of the year I keep the milk five meals, but prefer skimming it before it becomes thick. The cream is not stirred after being taken off, but is preserved sweet by sprinkling salt over it. After the churn is well rinsed with cold water, the cream is put in. The butter is salted in the proportion of a pint of salt to twelve pounds, and thoroughly worked over until it is free from milk. I then let it remain until quite cold, when it is worked over a second time and shaped into lumps for the market.

GROTON, *October 9th*, 1849.

Henry Holden's Statement.

The butter that I presented for inspection, was made from the milk of ten cows. I have sold my night's milk this sea-

son, and made thirty pounds or more of butter from my mornings' milk every week. I strain my milk into tin pans, and let it stand from thirty-six to forty-eight hours; the cream is then taken off and put into stone jars, where it is kept until it is ready to be churned. I churn twice a week. The butter is worked thoroughly, and salted with Liverpool salt, an ounce or more to the pound.

ACTON, *October 24th*, 1849.

ON AGRICULTURAL EXPERIMENTS.

The committee, consisting of Alfred Allen, David Heard, and D. Wetherbee, 2d, award the premiums for Agricultural Experiments, as follows:—

To Amos Wellington, of Ashby, Carrots, 1st premium, \$ 6 00
 Eben. Richardson, of Pepperell, Indian Corn, 1st do. 10 00
 Daniel L. Giles, of Lincoln, Compost Manure, 1st do. 10 00

Amos Wellington's Statement.

The carrots I offer for premium were raised on one-eighth of an acre of land, where I have raised carrots for seven years in succession. The land is of a deep soil natural to grass. I put on yearly about two cords of barn-manure, and plough it in early in the spring, very deep; about the middle of May plough again, harrow and rake the ground over to make it fine and smooth for the sowing-machine to pass over it. I have the rows twelve or fourteen inches apart. As soon as the carrots are up so as to be seen, I hoe between the rows to keep the weeds down. When the carrots are four or five inches high, I weed and thin them, so as to have them from three to five inches apart. My crop this year was one hundred and twenty baskets, weighing fifty-eight pounds per basket.

Expense of Crop:—

Interest on land,	-	-	-	-	\$0 75
Seed and sowing,	-	-	-	-	0 75

Manure,	-	-	-	-	-	\$ 5 00
Labor,	-	-	-	-	-	11 00
						<hr/>
						\$17 50

Value of the crop at ten dollars per ton, 6960 pounds, \$34 80, leaving a profit of \$17 30, equal to \$138 40 per acre.

ASHBY, *December 22d*, 1849.

Ebenezer Richardson's Statement.

In September, 1848, I ploughed deep and turned flat, four acres of ground. In the spring following, I harrowed well, and carted on fifty loads of manure to the acre, and laid it in heaps of as equal size, and at as equal distances apart as I could. I then set an experienced hand spreading the manure, directing him to spare no pains to spread it over all the ground alike. I then started the plough after him, being careful to plough deep enough to cover the manure, and not disturb the old sod. I then furrowed lightly, endeavoring not to exceed three feet apart, each way. The average distance of the furrows, I think, fell a little short of three feet. About the middle of May I planted with corn, putting six or seven seeds in the hill. When the corn was large enough, I ploughed it with two furrows in the row each way, running the plough as close to the corn as I could, without injury to it. At the second hoeing, which was after the 20th of June, I ploughed and hoed in the same manner as before, turning the furrow from the corn, and thinned it out to four stalks in a hill. I have never seen a field of corn come up and grow so evenly since I was large enough to work in the field, which I have done for forty years in succession, with but one exception.

Soon after the second hoeing, it nearly, or quite covered the ground, so that I thought it would injure rather than benefit it, to plough and hoe again. It grew and ripened finely, and in November was harvested. To ascertain the yield, I measured a square rod, which I found would average twenty-seven hills.

I cut twenty-seven hills, which were no more than an average with the rest of the field, husked and shelled the ears, and found that they yielded twenty-one quarts of corn, which weighed forty-two pounds, being about one hundred bushels to the acre.

PEPPERELL.

Daniel L. Giles's Statement.

The stock of my farm consists of twenty cows, four oxen, one horse, and six swine in winter ; twelve cows and one yoke of oxen in summer. I have no barn cellar. My manure is all made in the yard. In the fall of 1848, after clearing out all the manure, I carted into the barn yard, one hundred and twenty-five loads of mostly mud, taken from the ditching of my meadow. I carted into the hog yard, eighty loads of mud and loam. I also put under the stable floors, twenty-five loads of sods and loam, taken from the borders of a plough field. In April, 1849, I carted out, one hundred and seventeen loads of manure, that was made from the stock during the winter. In May, I commenced ploughing the compost in the barn yard, and where it was too deep, I turned it with a fork and shovel. This was done twice in a month, until the last of August. The manure was then taken from the hog yard, and put with the compost in the barn yard, where it remained in a heap till the first of October, when it was carted out and put upon my grass land ; by an accurate account, there were two hundred and seventy-one loads. This, with the one hundred and seventeen loads carted out in the spring, makes three hundred and eighty-eight loads made within the year. It is the opinion of good judges, that there were between fifty and sixty cords in the compost heap in the yard, of an excellent quality.

LINCOLN, October, 1849.

William Parker's Statement.

I commenced making my manure under my barn, about the first of November, 1848. After clearing out all I had on hand,

for top-dressing, I made, from that time to the last of May, 1849, two hundred and twenty-one large cart loads, which I carted out in April and May, on land for sowing and planting with spring grain. From June 1st, to September 1st, I manufactured and threw in a pile, one hundred and forty-eight large cart loads, which was viewed by the committee on farms, and judged by them, to contain two hundred loads. This last lot was carted out for top-dressing grass land, and I have nearly as much more in preparation.

My mode of making compost manure, is, to take the ashes of two hundred cords of peat, which is burnt every year, to bleach stock and dry paper, in my paper manufactory. To these ashes, I add all waste peat that is too small to burn, and peat muck brought from the bog, and loam collected from different parts of the farm, which I put into a reservoir, dug in the ground for the purpose. It held but two loads at first, now it holds twenty, which we can make as quickly as we could two loads, except the time of putting in and taking out. I fill the reservoir full with these materials, then let off three thousand gallons of boiling hot ley, twice a week, made from lime and soda ash, which will decompose all sods and lumps of peat, better in ten days, than they would be in a heap or barn yard, in a year. In two weeks it is fit to top dress any mowing land I have, and on some land, I have thought it almost equal to the best compost I can make in my yard. Still, I cart about all of it to the yard, and place it in the barn cellar, as I think it helps the green manure as much as it is helped by it, or more. I spread first, a layer of one, then of another, of the different kinds which I have. I add the night soil, from five out-houses, which are cleared twice a year, with which is mixed a considerable quantity of leached chloride of lime, left from bleaching paper stock.

I seldom keep more than one yoke of oxen, six cows and two horses. I can make manure easier than find hog-flesh to make it, so I keep but two hogs. In the summer, I have all the droppings from my cattle and horses, cleaned up and mixed with the stuff from the reservoir, once a week. In this way I have no manure dry up or heat, and my barn yard is kept per-

fectly clean to milk in. After I get my mixtures all together, I plough it all over once in three or four weeks, to have it well mixed, after which I throw it in heaps, where it remains about a month, when it is overhauled. It remains a few weeks more, and is then carted out where most needed.

It is about three years since I commenced making compost manure in this way. Formerly, I let all this ley run into the river, as I had never seen any one save it. I have no doubt, that enough is annually wasted, to make from ten to twenty thousand dollars' worth of manure in this State alone, simply because the value of it for manure is not known.

SUDBURY, *December 6th*, 1849.

INVENTIONS.

The committee, (Elijah Whiton, of Groton, chairman,) were favorably impressed with the large collection and array of various agricultural articles and implements exhibited by Parker & White, of Boston, all giving evidence of their deep interest and desire to furnish every article needed, to aid and improve agricultural labor. The committee notice, with especial favor, an improvement in ploughs and grindstone arbor, with improved rollers. They award Parker & White five dollars.

Numerous articles for agricultural purposes, were also exhibited by Ruggles, Nourse & Mason, many of them much improved since the last exhibition, particularly the corn sheller, vegetable cutter, ox yoke, and straw cutter. We award them - - - - - \$5 00

The committee were pleased to notice the hydraulic churn, exhibited by John Andrews, of Woburn, and award him - - - - - 2 00

Smith's vertical gate was much approved of by the committee, and was awarded a gratuity of - 3 00

Brown's meadow plough, was considered an improvement, and we award him - - 3 00

Vedder's water drawer, exhibited by L. Fay, would, in other days, have been invaluable, and is now so to those who prefer drawing water rather than to pump it. A gratuity awarded of - - 2 00

STATE SOCIETY'S BULL.

The committee appointed to take charge of the Devon Bull, presented to this society by the Massachusetts Society, report, that he was kept in Concord, from March 31, to June 5, during which time, he served eleven cows. From June 5, to September 18, he was kept in Wayland, where he served twenty-seven cows, and since September 18, he has been in Concord, where he has served nine cows. The expense of keeping him, has been paid by fees received, except a balance of five dollars.

Expense of keeping 38 weeks, at 75 cts.,	-	\$28 50
47 cows, at 50 cts. each,	- - - -	23 50
		<hr/>
Balance,	- - - - -	\$5 00

WORCESTER COUNTY AGRICULTURAL SOCIETY.

IN transmitting the reports of the operations and results of this society the past year, its president, Hon. Levi Lincoln, indicates, as most worthy of public notice and consideration, the remarks in the report on the ploughing match, upon the appearance and treatment of the cattle in the performance of their unusually hard stint of work ; and in the report on milch cows, the curious and interesting statistics of the products of the dairy, and of the comparative value of the farm stock, in the different towns of the county, with the useful practical suggestions in reference to the increase of the products and the improvement of the stock. The statements of the competitors, from their successful results, will encourage yet greater attention to the race of animals adapted to the objects of the dairy, and recommend the best selection of individuals, and the most liberal provision for their rearing and keeping. The appearance and the influence of the disease of the kine pox, in one of the cows of John W. Lincoln, as stated by him, will interest not the farmer only, but the physiologist, and awaken new regard to a discovery, which through the medium of the brute creation, has proved one of the greatest blessings a beneficent Providence has ever vouchsafed to the family of man.

The great inequality in the different towns, of the proportion of stock to the population, as given in the tables of Mr. Denny, may be accounted for, in a good measure, by the different pursuits and occupations of the inhabitants ; for where, in some places, the population is sparse and almost purely agricultural, in other parts of the county, the sources of employment are diverse and multiplied, and manufactures and the mechanic arts induce to frequent and dense settlements.

The testimony to the fine thrift and promising appearance of the full blood Ayrshire and Devon stock, introduced into the county through the munificent liberality of the trustees of the

Massachusetts Society for the Promotion of Agriculture, as expressed in the report on bulls, and the practical observations and comparisons contained in that report, upon the peculiar properties of different breeds as adapted to different localities, and of the character of the stock heretofore reared and used in the county, will excite to still further enquiry, and cannot fail to admonish to more discriminating and judicious selections, and secure corresponding improvement of the stock to the particular purposes for which its qualities are best suited.

The reports on the cultivation of root crops, will prove highly useful to the practical husbandman. In the discouragement which the disease of the potato has given to the cultivation of an esculent, hitherto so universally used as food both for man and beast, it is consolatory to learn, that another vegetable, much more valuable in its use for the latter, and hardly more costly in its production, is to be had in the carrot. The satisfactory experiments, as detailed in the statements, show the certain profits of a well cultivated carrot field, and the great advantage of the crop, in the keeping of stock. Mr. Dodge's estimate of the relative value of the different varieties of roots for this purpose, is worthy the profound regard of every farmer. The representation of Mr. Wheeler, that he has grown the carrot on the same land for six successive years with increasing advantage, and at last with a surprisingly large crop, presents a new fact in rural economy for the consideration of the advocates of rotation; while a no less novel result, in the cultivation by Mr. Lincoln, of a buck wheat stubble, should lead to further experiments upon the effect of that plant on succeeding crops. The new variety of potato, also mentioned by Mr. Lincoln, commends itself to further cultivation.

The prize essay, "on the means to be used to create a greater interest in the cause of agriculture," by the Rev. T. D. P. Stone, the chaplain and principal instructor of the State Reform School, at Westborough, will not fail to arrest attention. With great directness and force, he has pointed to defects in our system of public instruction, and indicated methods by which to diffuse practical knowledge through the laboring masses of an agricultural community. May it not be hoped that his sugges-

tions, with similar appeals from reflecting and enlightened men, in other positions alike favorable to extended observation, will draw the public attention to the wants of the country and of the age, and lead the councils of the State still onward, in the fulfilment of that constitutional duty, which enjoins the "promotion of agriculture," no less than "the encouragement of the arts," and "cherishing the interests of literature and the sciences."

The annual exhibition of the society was held at Worcester, on Wednesday, the 20th of September last.

PLOUGHING MATCH.

The committee direct their chairman to express in their report, the high satisfaction they have had in the discharge of their appropriate duties, on this cheering anniversary. Several of them have heretofore served on committees in the same department of labor, and all unite in the opinion that all former exhibitions, creditable as most of them were, are surpassed in excellence by that of this day, taken as a whole. The ground selected was tough grass land, somewhat uneven and strong, the roots of grass being thick and strong set; it was land which a prudent farmer would hardly think proper to turn up with a single team. The unusual dryness of the soil increased the difficulty of turning flat and smooth furrows; yet was the work accomplished in comparatively little time, and with a remarkable degree of completeness—the shortest space of time being forty-five, and the largest, sixty-three minutes for one-eighth of an acre. Ten teams were entered as competitors. In their work, there was but little difference between the best and the poorest; so little, that the committee could furnish no very sound reasons, even to themselves for some of their preferences. They have cheerfully exercised the power confided to them, of awarding premiums to every one of them, so that the discriminations they were obliged to make, relate only to the amount of the sum awarded.

They have awarded the *first* premium of \$10, to Anson War-

ren, of Westborough, whose work was performed in forty-five minutes.—Oxen five years old.

The *second*, of \$9, to Joseph H. Whitney, of Westborough, work fifty-nine minutes.

The *third*, of \$8, to Putnam King, of Sutton, work fifty minutes.

The *fourth*, of \$7, to Waters Putnam, of Sutton, work performed in sixty-three minutes, by a pair of steers, only three years old, whose power and docility excited unusual admiration.

The *fifth*, of \$6, to Lorin Carpenter, of Charlton, forty-seven minutes.

The *sixth*, of \$6, to Benjamin Harrington, of Westborough, fifty-three minutes.

The *seventh*, of \$4, to Harvey Putnam, of Sutton, fifty-seven minutes.

The *eighth*, of \$3, to Horace Stockwell, of Sutton, fifty-five minutes.

The *ninth*, of \$2, to William Eaton, Jr., of Worcester, forty-eight minutes.

The *tenth*, of \$1, to Joseph A. Reed, of Princeton, Nathan Reed, driver, fifty-six minutes.

The committee could not but wonder at the perfect, easy control of the ploughmen over their oxen ; no boisterous or harsh words were uttered, and no blows were inflicted which a man might not have received without suffering. These noble animals performed their task with a readiness, ease and precision, which manifested good keeping, kind treatment, and judicious training, proving that poor fare, unreasonable work, and severe lashes, are as much opposed to sound economy, as they are to the dictates of humanity.

S. M. BURNSIDE, *Chairman*.

FAT CATTLE.

It was the province of the committee to decide upon the merits of the "fat ox and the fat cow, fitted for the slaughter,

regard being had to the mode and expense of fattening." There was no distinction made as to the age of the animals exhibited, in coming to a conclusion as to their merits. It was with pleasure that the committee found themselves bound to regard the mode and expense of fattening. It is well to encourage, by premiums, the raising of rare and valuable stock ; but in doing this, we should exercise that economy which is essential to success in all departments of business. Not only were the animals exhibited of a superior order, and well fattened, but they were in every instance fattened at a very small expense and in a short time, with grass.

There were five fat oxen entered for premium, all of native breed, and raised in this county ; their ages, from four to seven years. The committee award

For the best fat ox, to Asa Mathews, of Worcester,	. \$12 00
Second best, Asa Mathews's near ox,	. . . 10 00
Third best, Asa Rice's, of West Boylston,	. . . 8 00
Fourth best, Silas Dudley's, of Mendon,	. . . 5 00
The best fat cow, Cyrus Gale's, of Northborough, native breed	. . . . . 10 00
The second, Abiel Jaques's, of Worcester, native breed,	6 00
The third, Seth Wyman's, of Shrewsbury, four years old cow, half Durham breed,	. . . . . 4 00

Six fat cows were exhibited for premium. They were from three to nine years old, and, with one exception, were raised in Worcester county.

W. F. SLOCUM, *Chairman.*

MILCH Cows.

The number of cows entered for premium, was eight ; for exhibition, fifteen. None of the applicants complied strictly with the rules of the society, except Joseph A. Reed, of Princeton, to whom was awarded the only premium, of fifteen dollars, for his three cows, raised by himself. The cow entered by John W. Lincoln, was deemed the best cow exhibited, and would

have obtained the highest premium, but for the omission of her weight, which was understood to be unavoidable.

That portion of the farmer's stock, from which he derives many of the luxuries and necessities of life, and which should be to him a source of income, has not, in the opinion of the committee, received that consideration which its importance demands. With the increase of our population, the demand for the products of the cow increases; and it is a question yet to be settled, whether the farmers of this county have the ability, or are so far alive to their own interest, that they will be enabled to meet this increased demand. All the arts are sisters,—each improves the other; and as we increase and improve in manufactures, so shall we advance in agriculture. Every thing depends upon the cultivation of the soil; it forms the internal strength of communities, and introduces into their midst, the circulation of riches from without.

At one time, Massachusetts made her own butter and cheese. By an official return, made in 1787, it appears, that from this State there were exported, butter and cheese valued at about \$46,000, the population then being about one-half the present population. Our county stands comparatively high, in reference to the products of the dairy. Can we say that we make our own butter and cheese now? The produce of the dairy now exported from this county, probably amounts to \$100,000; and the amount of butter and cheese imported and consumed in the county, to a much larger sum. Are the cows in the county as good as they can be, or as profitable as they should be? What would be the answer of the farmers from the dairy counties of New York? They look upon cows that yield but fourteen quarts of strained milk per day, through the season, on grass, as rather poor cows, and are not satisfied without a yield of nearly twenty quarts each. What will the cows of this county average? Let the farmers answer.

Your committee feel, that but little advance will be made, until our cows are reared within the county. An intelligent farmer of this county, speaking on this subject, said, "I wish to impress deeply upon the minds of brother farmers, the importance of raising their own cows; I say cows, for they are of

more importance than oxen, if we cannot attend to the raising of both; and let us be particular to get them from our very best cows, and quite as particular to have regard to the bull. I believe a heifer can be raised, and put in calf at three years old, for twenty-five dollars."

Sixty years since, it was said by a distinguished individual, with reference to the farmers of this county, "Because their ancestors reaped but *ten* bushels of produce from any given quantity of ground, it was deemed a reason for their posterity's not trying to obtain *eleven*. Let us eradicate every trait of this stupid predilection in favor of the customs of our progenitors, and one great clog will be removed." Our ancestors accomplished much,—we honor them for their zeal and industry; let their posterity profit by their instruction, and, with increased light and facilities, accomplish more. We have no data, showing the number of cows in the county; premising that the proportion of cows to the stock and products of the farm, may be somewhat similar, the census of 1840, and the official returns of 1844 have been consulted; showing, that the value of neat stock, swine, produce of the dairy and of the soil, was to each person, for the whole State, about \$25 75. For the county of Worcester, \$42 50.

New Braintree,	\$135 00	Hardwick,	\$55 00
Boylston,	69 00	Rutland,	54 75
Barre,	67 50	Dudley,	53 00
Shrewsbury,	67 00	Spencer,	52 75
Warren,	66 75	Petersham,	52 00
Sterling,	66 50	Charlton,	49 75
Princeton,	63 00	North Brookfield,	47 50
Westborough,	63 00	Westminster,	47 50
Southborough,	61 75	Hubbardston,	47 25
Harvard,	61 00	Paxton,	47 00
Oakham,	60 50	Holden,	46 75
Phillipston,	60 50	Northborough,	46 25
Berlin,	56 50	Royalston,	44 50
Auburn,	56 25	Leominster,	42 50
Bolton,	55 00	Uxbridge,	42 25

Lunenburg,	\$41 50	Mendon & Blackstone,	\$32 00
Brookfield,	39 50	Leicester,	31 50
Sturbridge,	38 75	Winchendon,	31 50
Grafton,	37 75	Lancaster,	30 50
West Boylston,	37 50	Fitchburg,	30 50
Ashburnham,	37 25	Gardner,	27 75
Athol,	36 25	Upton,	27 50
Dana,	34 00	Douglas,	26 50
Milford,	34 00	Worcester,	24 50
Oxford,	34 00	Millbury,	24 25
Sutton,	33 50	Northbridge,	22 75
Southbridge,	33 00	Webster,	12 50
Templeton,	32 75		

It is with pleasure, that the committee allude to the efforts of the trustees of the Massachusetts Society, to improve the stock of the State ; and they trust that their efforts will be continued, until farmers, generally, have an opportunity to coöperate with them, in this important undertaking.

If all those who offer stock for exhibition only, would follow the example of Mr. Wheeler, in furnishing a *written statement*, the purposes of the society would be more fully accomplished. It has been demonstrated, that competitors for premiums *can* conform to the rules, and it is hoped that future committees will be furnished seasonably with certificates, as required by the society.

GEO. DENNY, *Chairman*.

Joseph A. Reed's Statement.

Large red cow, Devonshire breed, six years and four and a half months old, weighs eleven hundred pounds, calved the 15th of April ; calf handsome and good size, raising a steer ; kept with five others ; no other keeping than by hay to the 30th of May, and only by pasture since. Calves in March next.

June 1st to 10th, inclusive,	424 1-4 lbs.,	154 5-8 qts.	Milk,
From which was made	22	"	Butter.
Sept. 1st to 10th, inclusive,	280 1-2 lbs.,	100	" Milk,
From which was made	15 15-16 lbs.		Butter.

Small red cow, six years four months old, Devonshire breed, weighs nine hundred and fifty-five pounds, calved April 14; bull calf, raising a steer. She is to calve in March next. Keeping as before stated.

June 1st to 10th, inclusive,	364 3-4 lbs.,	134 qts.	Milk,
From which was made	18 14-16 lbs.		Butter.
Sept. 1st to 10th, inclusive,	247 lbs.,	87 1-4 qts.	Milk,
From which was made	12 1-8 lbs.		Butter.

Light red cow, five years five and a half months old; half Ayrshire, one-fourth Holderness, and one-fourth native; weighs nine hundred and seventy pounds; calved January 22, growing up a steer. Is to calve in February next; keeping as the others; this, with the other two, raised by me. The measure all *beer measure*.

June 1st to 10th, inclusive,	266 lbs.,	97 3-4 qts.	Milk,
From which was made	15 5-16 lbs.		Butter.
Sept. 1st to 10th, inclusive,	195 lbs.,	65 1-4 qts.	Milk,
From which was made	9 11-16 lbs.		Butter.

My dairy consists of five cows; the other two, three years old, each; one-quarter, each, Ayrshire and Holderness, and half native; one calved in February, and the other in May; the calf of one is raising a steer, the other was fattened and killed. My calves were kept wholly on new milk; one from January 22 to May 17, another from February 22 to May 17, and one from April 1 to June 4; two others from April 14 and 15 to July 1; one calf was purchased and fattened; amount of veal sold, \$14. We have made, during the season, four hundred and one and a half pounds butter, one hundred and ninety and three-quarter pounds two-meal cheese, and sold one hundred and forty-three quarts of milk, besides what has been used in the family, numbering from five to eleven persons. Number of swine kept, as connected with the dairy, five. My feed has

been short, since the middle of July, in consequence of the dry weather.

PRINCETON, 1849.

John W. Lincoln's Statement.

My cow was raised in Shrewsbury; dropped her calf the 15th of April last, suckled the same five weeks; kept with ten other cows; their only feed has been grass, gathered by themselves, in the pasture.

June 1st to 10th, inclusive, 384 lbs., 152 9-10 qts.	Milk,
From which was made 21 1-2 lbs.	Butter.
Sept. 1st to 10th, inclusive, 361 1-4 lbs., 144 5-10 qts.	Milk,
From which was made 19 1-2 lbs.	Butter.

The butter, in both cases, was weighed after the butter was well worked, and freed from the buttermilk.

This cow had the kine pox, during the first days of June, which is believed to have lessened her milk. On the first day of June, she gave thirty-six and a half pounds; on the tenth day, forty-one and a quarter pounds.

WORCESTER.

William Eames's Statement.

The cow I offer for premium, was raised by me; Ayrshire and native; is five years old, and weighs one thousand and ninety pounds.

June 1st to 10th, 293 lbs., 2 1-2 lbs. per qt.
June 4th, she gave 31 lbs., from which was made 1 9-16 lbs. butter.
Sept. 1st to 10th, 227 lbs. Milk
Sept. 6th, she gave 23 lbs. milk, from which was made 1 3-16 lbs. butter.

This cow has produced four heifer calves, all of which have been raised; has been kept with three others, and fed on grass

only, with the exception of corn stalks for two weeks past. Calved April 20.

WORCESTER, 1849.

Charles White's Statement.

The cow offered for premium is four years old, native breed, raised in Barre ; calved June 21 ; the calf taken from the cow when eight days old, and put out to be raised. The cow has been kept in pasture, two miles distant, making four miles travel per day. After the first of August, I gave her, on an average, three quarts of Indian meal per day. I occasionally weighed and measured her milk, in July and August, when it uniformly exceeded sixteen quarts per day, *strained*, beer measure ; generally, about sixteen and a half to seventeen quarts per day. She weighs eleven hundred and fifty-five pounds. From Sept. 10th to 20th, exclusive *ten days*, her milk weighed three hundred and ninety-five pounds ; one quart, beer measure, weighing two and a half pounds.

My other cow, offered for exhibition, weighs thirteen hundred and twenty pounds ; had her last calf in August, 1848 : is expected to calve in April next. In October and November last, she gave fourteen to fifteen quarts, strained milk per day.

William A. Wheeler's Statement.

I offer, for exhibition only, my mouse-colored cow, seven years old, weighing fourteen hundred and seventy pounds ; pedigree unknown,—said to be one-half Devonshire ; calved in August, 1848 ; now dry ; expected to calve in October. She gave thirteen quarts of milk per day, for the first ten days in June last, and was reported to have given twenty-two quarts of milk per day, for five months after calving.

My native cow, six years old, calved the middle of August last ; has since averaged sixteen quarts of milk per day.

My heifer, raised by me, supposed to be one-half Durham, two years old the seventh day of June last, calved the 24th of

June, and has given eleven quarts of milk per day, since the calf was taken from her.

WORCESTER, 1849.

BULLS.

The committee on Bulls not less than two years old, report : At the head of the pens stood McGregor, a full blood Ayrshire, three years old, kept on the farm of J. W. Lincoln, of Worcester. Next stood Roebuck, a full blood North Devon, two years old, and kept on the farm of Harvey Dodge, in Sutton. Both these animals, each a fine representative of its breed, were presented to the society, by the Massachusetts Society for the promotion of Agriculture. They descend from animals of pure blood and high excellence, imported at great cost, for the purpose of improving the stock of the State. Generously distributed among the different county societies, as the descendants of these imported animals have been, it is hoped that their labors will result in unmixed good to the farmers at large. We at any rate must be satisfied, for although our oxen are perhaps unequalled by those of any other section, still there is room for improvement. Our cows certainly need improvement and he who will avail himself of the services of McGregor, may have reasonable assurance that his dairy will yield a still better return.

The half-blood Durham bull of Charles Taft, of Worcester, three years old, and weighing 2400 pounds, would easily have passed for a full blood.

Next came the half bred Creampot bull of Rufus Rich, of Spencer, three years old—followed by the half Devon half Durham bull of H. H. Downer, of Thetford, Vt. To Mr. Downer we recommend a gratuity of three dollars for his valuable addition to our show.

Messrs. T. & J. S. Merriman, of Auburn, offered a good bull three years old—and Coolidge Pratt, of Oxford, a good animal, half blood Devon.

The half blood Ayrshire and Durham bull of Milton S. Morse, of Winchendon, the committee considered a very fine animal, though rather too small.

Peter B. Stockwell, of Sutton, presented a fine blue bull, two years old, of the Alderney breed.

A fine Devon bull three years old, was presented by Walter Bigelow, of Worcester. Thomas W. Ward, of Shrewsbury, offered a fine bull for exhibition *only*. The committee think Mr. Ward deserves the thanks of the society for this contribution.

The four year old North Devon bull of Sewall Sargeant, of Leicester, came down to overlook the distribution of the Society's prizes—withdrawing from competition therefor from the proud consciousness that what bull could do *he* had done, having received all that the rules of the society would allow him to take away.

There was need of nice discrimination in determining to which of the eight competitors the three premiums should be given. After repeated examination, there was awarded :—

To Rufus Rich, of Spencer, 1st premium,	- -	\$10 00
Coolidge Pratt, of Oxford, 2d do.	- -	7 00
Peter B. Stockwell, of Sutton, 3d do.	- -	5 00

In all that has been done to improve our stock of neat cattle we have not as yet succeeded in establishing a distinct breed, suited to our climate and feed. In England the horse is employed mostly in agricultural work. Here the ox is universally used, and consequently in any attempt to improve our breed of cattle, regard should be had to the qualities sought for in working cattle. For these qualities the North Devons are unrivalled. A few years ago the farmers of Sutton possessed a stock famed for their working properties, of a uniform red color—hardy, active, and docile, rather under size, seldom weighing more than three thousand pounds to the pair. These oxen carried off most of the prizes of the society. The "Sutton Ox" was as well known in New, as the Devon Ox in Old England. The Sutton Ox was the Devon of the United States, nearly thorough bred from the imported Devon of Europe.

But the cows failed—the milking qualities of this breed was low, and to obviate this defect recourse was had to crossing

with what first came to hand. The result was a progeny of all colors, sizes and shapes, with no distinctive trait, and much inferior to the original stock. We have to-day seen *chance* cows and oxen, which would favorably compare with those imported. But they are *chance*. Their ancestors may have been, and their descendants may be unfit to be kept, and more unfit to be killed.

The oxen owned by Nathaniel Dodge, of Sutton, and which have graced our shows for five years past, winning in one or another *class* a sequence of our highest prizes, have never to our knowledge been excelled. They were a cross from the old Sutton stock and a breed known as the Holderness, and weighed last February 4200 pounds live weight, and 4035 pounds slaughtered, being then five years and nine months old.

For many years *Princeton* was as famous for handsome and good cows as *Sutton* for its Working Oxen. And Princeton derived its advantages in this respect from a judicious crossing of the Holderness with the best animals of native breed. Through the munificence of the Massachusetts Society for promoting Agriculture, the farmers of Princeton and Sutton have it in their power to restore their former reputation. The North Devon bull Roebuck commends himself especially to the competitor with working oxen. While in McGregor, the descendant of one of the first milkers, of a breed (the Ayrshire) unequalled in that quality, the dairymen of the county will find all they can desire.

As successive years roll on we may well hope that our exhibitions will show the true value of these animals. Crossed with our best cows, may we not hope at length to establish among ourselves a distinct breed, and that hereafter, instead of a Princeton cow of a "mixed breed," or a Sutton ox from a blue bull, we may take pride in writing upon our own "cards" and showing to strangers on our hills, in the yoke or at the milk pail, the beautiful form of the Worcestershire breed of cattle.

H. H. KEITH, *Chairman*.

POULTRY.

In a previous report on this subject, I indulged in some remarks on the different varieties of the dung-hill fowl known in this region, and at that time arrived at the conclusion that the old-fashioned native-fowl was preferable to any known in our markets. I have, however, from a more recent experience, changed my views upon the subject. I purchased a pair of the full-blood Cochin China fowls; (there are many called so that are not;) the hen commenced laying early in the spring, and laid twenty-two eggs, sat, and hatched a brood of chickens—weaned them at three weeks and four days old, and then commenced and laid thirty-two eggs; sat and hatched another brood, which were weaned at the same age as the one preceding. She has since laid thirty-three eggs, and last week hatched a third brood of chickens. It will thus be seen that the whole number of eggs laid amounts to eighty-seven.

From the foregoing facts I have arrived at the conclusion that the genuine Cochin China are the most profitable variety of the barn-yard fowl.

The committee were highly gratified with a fine specimen of the full blood Cochin China fowls, exhibited by G. W. George of Haverhill; several specimens of Poland Top-knot and Golden Pheasants were also exhibited, to which they would gladly have awarded premiums, had they not used up all the funds at their disposal. They award to:—

Oliver Barret, of Bolton, 1st premium, for lot of Turkeys,	-	-	-	-	-	\$3 00
Caleb Nourse, of Bolton, 2d premium, for do.	-	-	-	-	-	2 00
John Farwell, of Worcester, 1st premium, for lot of barn-yard fowls of the China and Dorking breed,	-	-	-	-	-	3 00
Benjamin H. Franklin, of Worcester, 2d premium,	-	-	-	-	-	2 00
Caleb Nourse, of Bolton, 3d premium,	-	-	-	-	-	1 00
David R. Gale, of Worcester, premium for ducks,	-	-	-	-	-	3 00

B. TIFFANY, *Chairman.*

BUTTER.

The committee, (consisting of JOHN W. LINCOLN, *Chairman*, Mrs. Joseph Thayer, Mrs. Walter Bigelow, Mrs. George N. Sibly, Mrs. William S. Lincoln, and Messrs. John A. Fayerweather, and Francis Harrington,) found upon the table, ten lots of butter, manufactured in the county, which had been offered for premium, and one lot presented by George Flagg, of Holden, which was excluded from premium, in consequence of the entry not having been seasonably made.

The committee awarded the first premium of eight dollars to Levi Bigelow, of Berlin, for lot No. 2; the second premium of five dollars, to Stephen Savary, of Auburn, for lot No. 1; the third premium of four dollars, to Lemuel B. Hapgood, of Shrewsbury, for lot No. 10; the fourth premium of three dollars, to Melvin Allen, of Shrewsbury, for lot No. 5; and Washington's Letters on Agriculture, as a fifth premium to J. F. Knowlton, of Shrewsbury, for lot No. 9. Lot No. 7, entered by John B. Moore, of Worcester, was considered by part of the committee, superior to lot No. 9; on this question, the committee were equally divided, and the chairman was called upon for a decision. He gave his opinion in favor of lot No. 9, not that he considered it of better flavor, but because it appeared to him better worked, and of a more yellow color. It was the opinion of the committee, that Mr. Flagg would have received a premium, had his butter been entered in season.

ROOT CROPS.

Of carrots, there were entered two lots by Harvey Dodge, of Sutton, one lot by Silas Allen, of Shrewsbury, one lot by William S. Lincoln, of Worcester, one lot by Nathaniel P. Gates, of Worcester, and one by William A. Wheeler, of Worcester; and of ruta bagas, one lot by Benjamin N. Childs, of Worcester.

The committee proceeded to view the crops in the ground. They visited Silas Allen, and examined his carrot field. The

tops of a portion of the crop were in some degree blasted. In some of the rows, there was a deficiency of roots. He has since found, that the blast had diminished his crop to a greater extent than he had expected, and consequently has made no return.

From there we went to Harvey Dodge's, and spent some time in viewing the improvements he is making on his farm, He is largely underdraining his land, which he is doing in a very judicious manner, and obviously to great advantage. He has the work done by contract, and at a price much lower than the committee supposed such work could be done. We examined the land where the drains had been made in previous years, and compared it with the undrained land in its vicinity, and the benefits were very obvious. His carrot crop looked well. He showed us his ruta бага field, which had failed to yield a fair crop, in consequence of the bad quality of the seed. The products more nearly resembled kale, than ruta бага. We were shown another portion of a carrot field, on which the manure had been spread on the grass ground, then turned under deep with the turf, and the carrot seed sowed on the surface. The carrots on the land thus prepared, looked finely. and promised a large crop.

The committee then proceeded to view the crops of William S. Lincoln. The carrots looked well, but in some of the rows, "they were few and far between." The occasion of this deficiency of roots was said to have been the bad quality of the seed. The crop of William A. Wheeler looked better, in the opinion of the committee, than any they have seen in the same ground, which is the seventh consecutive crop of carrots from the same land. The crop of Nathaniel P. Gates promised a good yield.

Mr. Dodge's statement gives on his one-half acre lot, 365½ bushels; and on his one-quarter acre lot, 194½ bushels; and also a quantity of beets and ruta bagas, having also, fruit trees on the same land. Mr. Lincoln's statement gives, on his one-quarter acre, 184½ bushels. Mr. Gates returns, that he raised 226 bushels of carrots on one-quarter of an acre of land, on which he put seven loads of manure, and expended eight days

of labor, but gives no other particulars required by the society, and therefore, is excluded from being considered a competitor. The statement of Mr. Wheeler, was satisfactory in all respects, except, that it was not seasonably received. It gives the gratifying result of 1,066½ bushels on the acre, and on the best half acre, 567 bushels, and on the best quarter acre, 293 bushels, on his poorest half acre, 499½ bushels, and on the poorest quarter acre, 241 bushels. By this it appears, that on the least productive one-half acre of his field, he had a greater crop than the only other one offered, and that his crop on the one-quarter acre of least yield, exceeded that of any other competitor.

The statement of the expenses is minute, and shows that the profit is more than remunerating. It will be observed, that no other competitor gives credit for any value in the tops. It is not believed, however, that either of them regards the tops as worthless. They are of value as feed for cattle, if offered when green, and they have recently become an article of merchandise for the manufacture of a blue dye, as a substitute for woad, for which purpose they are said to be of much more value than as food for stock.

The only claim for premiums for carrots, on one-half acre of land, which conforms to the rules of the society, is that of Harvey Dodge, who is entitled to ten dollars.

The claims for premiums for carrots, on one-quarter acre of land, and in conformity to the proposals offered, are Harvey Dodge's, for his crop of 194½ bushels; and William S. Lincoln, for his crop of 184½ bushels. The committee have awarded to Mr. Dodge, the first premium of six dollars, for his one-quarter acre of carrots, and the second premium of three dollars, to Mr. Lincoln. The public are under great obligations to Mr. Wheeler, for his successful experiment of growing carrots on the same ground, for seven succeeding years, and for the useful information he has offered them, the committee recommend, that the gratuity of Coleman's European Agriculture, and Washington's Letters on Agriculture, be awarded him.*

* He would have received the highest premium offered by the society, for his crop of carrots grown both on one-half and one-quarter acre of ground, had he conformed to the rule, and made his entry and statement at the time prescribed.

The crop of ruta bagas, grown by Benjamin N. Childs, as by his statement, amounted to 240 bushels on one-quarter acre of land. It is to be regretted that, as he had no competitor, he should not have given the information desired by the society, in a manner that would have been useful. But when he states, in answer to the first question—what was the general state of the land in 1848?—that it was *medium*; and to the second question—manner of cultivation in 1848?—that it is the “usual method”; he gives no information to any agriculturist, of the manner by which he may obtain a similar crop. The “usual method” of Mr. Childs may vary much from that of others, and the public would wish to be definitely informed, what is his “*usual* method,” that they might have a guide for their cultivation. If the committee might judge from the evidence resulting from their personal examination of this crop, they have reason to believe, that the “usual method” is a very good one, but have no information of the details. They are disposed, under the circumstances, to recommend that Mr. Childs be given a copy of Coleman’s *European Agriculture*, as a gratuity for his crop of ruta bagas.

JOHN W. LINCOLN, *Chairman*.

Harvey Dodge’s Statement.

The land on which my half acre of carrots were raised the present season, is naturally quite moist, with a clayey, compact subsoil. The condition of the land in 1848 was good; it was in grass and had been for ten years. Twenty loads of good stable manure were spread on the half acre the 24th of May, and immediately ploughed under, eight inches deep; twenty-five bushels of spent ashes were spread on the furrow and harrowed in, and then planted with corn. The product was thirty bushels.

CARROT FIELD.		Dr.
1849.		
May 1.	To ploughing, and carting of cornstalks,	\$1 00
" 20.	" twenty-five loads of manure, -	25 00
" "	" carting and spreading the same, -	3 00
" "	" ploughing the same with two yoke oxen,	1 00
" 28.	" " second time, - -	1 00
June 6.	" " and harrowing, &c., -	1 50
" "	" three-fourths pound hay seed and sowing with machine, - - - - -	1 25
June 15.	To hoeing between rows before carrots were up,	2 00
July 3-4.	" boy's labor, weeding, - -	2 00
" 24.	" " " " and hoeing, -	3 00
Aug. 24.	" hoeing and weeding to this time, -	2 00
Nov. 3.	" labor of harvesting, carting and housing,	9 00
	Interest on land at \$200 per acre, -	6 00
		<hr/> \$57 75

CARROT FIELD.		Cr.
1849.		
Nov. 5.	By one-third of manure back for next crop,	\$ 8 33
" "	" 365 one-third bushels carrots at 28 cents,	102 29
Weight was 20-440 at \$10 per ton on the field, which price was received.		
		<hr/> \$110 52

Profit, - \$52 77

The forty-five rods of land on which my second lot of carrots grew the present season, is separate from the first lot; is a deep yellow loam of good quality. The quality of the land in 1848, good, having been to grass for seven years. May 20, 1848, manure of good quality at the rate of forty loads per acre, was spread on the grass and turned under eight inches. Corn was planted, the product was sixty-five bushels to the acre, besides a large growth of turnips.

SECOND FIELD.		Dr.
1849.		
May 13.	To thirteen loads of strong manure, from tripery, mixed with small bones, - -	\$16 25
May 13.	To carting, spreading and ploughing the same,	4 00
" 15.	" ploughing second and third time, -	1 00
June 6.	" one-fourth lb. seed and sowing with machine, - - - - -	75
June 15.	To hoeing between rows before carrots were up, - - - - -	50
July 20.	To boy's labor, hoeing and weeding to this time, - - - - -	2 00
Aug. 26.	To boy's labor, hoeing and weeding do.	3 00
Nov. 2-3.	" labor of harvesting, - - -	5 00
	" interest on land at \$250 per acre, -	3 75
		<hr/> \$36 05

CARROT FIELD.		Cr.
1849.		
Nov. 23.	By one-third of manure back, -	\$ 5 41
" "	" 10,762 lbs. sold on the lot at \$10 per ton,	53 81
		<hr/> \$59 22
Profit, -		\$23 17.

Within the limits of this forty-five rods of ground, were raised twenty bushels of beets and ruta bagas, worth, say \$3 33

Also, fourteen apple trees and ten peach trees, four year's growth, worth to me, at least, - - 12 00

\$15 33

It will not be understood that I claim any credit for the growth of the trees, though the rapid growth of this season has been important to me. The manure which was used on this lot, was of the very best quality, and was extended to ten rods of potato ground next adjoining, so that not more than ten loads were used on the part occupied by carrots. The loads of manure will be considered as containing twenty-five bushels,

(potato measure.) Sixteen bushels of turnips were raised on the half acre lot, that were grown with the carrots, and no account made of them in the carrot measure. The whole product of the two lots was fifteen tons six hundred and one pounds of carrots on three quarters of an acre and five rods of land. This, at \$11 per ton, which was offered, delivered, amounts to \$168 30. Seven tons were sold at the above rate, and the balance was stored for my own stock.

I will here offer some reasons why my crop has not been so large as in some past seasons. In the first place, my land was not sufficiently mellow the 1st or 10th of May, to admit of the seed being sowed at that time, and it was not put in until the 7th of June. If the land had been dry and mellow as early as the 7th of May, and the crop had had one month more to mature in, I think it would have reached one thousand bushels per acre. It will be remembered that the land on which these two crops grew, was grass in the spring of 1848, and ploughed unusually deep, so that the sod was not disturbed that season; and at the first ploughing last spring it was found quite unyielding, and unfit to receive the seed so early as I could have wished. The land is now in fine condition, as no labor was spared to keep it free from weeds and other useless plants.

As to the relative value of the different kinds of roots for stock, I estimate them as follows:—When good hay is worth \$12 per ton, corn 75 cents per bushel, carrots are worth 30 cents per bushel, potatoes 25, sugar beets 18, ruta бага 16, round turnips 12½. By this estimate it may be inferred that roots are cheapest to feed to our common stock of cattle, horses or hogs against corn at the above price. If this estimate be correct, may it not be inferred that the whole product, say \$59 22, for carrots and \$15 33 for the twenty bushels of beets and turnips, and growth of trees on my forty-five rods of land was at least a remunerating crop?

The root crop to me is of importance and has been for years, —of that same importance that the farmer of Marshfield said it was to Old England, viz., that she could not pay her interest money the second year, if her turnip crop should fail. My roots the present season will be of more value to me than all

the other crops on the farm, and yet they occupy but a small portion of ground. The whole product on $2\frac{1}{2}$ acres, is

Of potatoes,	-	-	-	-	350 bushels.
" English or round turnips, principally raised					
with corn,	-	-	-	-	500 bushels.
Of carrots, in all,	-	-	-	-	612 "
" Ruta бага and sugar beets,	-	-	-	-	100 "
					<hr/>
					1562

My ruta бага crop was an entire failure. On one-fourth of an acre I gathered about 50 bushels, instead of 200, which would have been a fair crop. I have experienced this loss twice before within ten years, and the reason I have assigned, which I have no doubt is the true one, is, that home seed was used instead of imported. My crop has uniformly been good when imported seed was used, and as uniformly bad when domestic seed was used. About seven bushels of turnips and carrots are being cooked every day for my shoats, 85 in number, in connection with tripe factory offal, without any meal as yet. I intend making experiments with shoats on roots alone, and will give the result.

In compliance with a wish of some of your committee, that I should furnish a statement of the amount of corn raised on the half acre of land on which my premium crop of carrots was raised last year, as it has been described in my last year's statement, I pass over its condition last spring, and give the actual cost of cultivation, and the amount of produce the present season in corn and roots.

1849.	CORNFIELD. (Half acre.)	DR.
May 8.	To ploughing land twice,	- - \$1 00
" 16.	" striking out and planting,	- - 1 00
	" corn and turnip seed,	- - 50
June-July.	Cultivating, ploughing and hoeing,	- 3 00
Nov.	Interest on land at \$250 per acre,	- 8 25
		<hr/>
		\$13 75

CONTRA.

CR.

1849.

Nov. 15.	By 50 bushels turnips at 9d.,	-	-	\$ 6 00
" "	" 33 bushels corn at 75 cents,	-	-	24 75
				<hr/>
				\$30 75

The corn fodder in this case is put against the labor of harvesting, and no account made of either. The profit then would seem to be \$17 or \$34 per acre. As no manure of any kind was applied to this land this season, it is natural to suppose that the land is now left exhausted, or that the crop sustained itself from the one-third of its manure back on last year's crop. We will suppose it to have consumed the surplus manure of last year, and that the land is now in as low condition as it was before it was planted to carrots and corn; then we must conclude that the profit of the corn crop was small, after all expenses are paid, unless we add the worth of the growth of thirty young apple trees of three years age.

I have been thus particular in describing the labor expended, and the produce the present year, as I have, been frequently importuned to know if 950 bushels of carrots could be raised on one acre, and if they could, are they really worth \$10 per ton; and if they are, have you not ruined your land for any other crop. Now I do not admit that the land is very nearly exhausted, after producing at the rate of sixty-six bushels of corn per acre, without manure, not a very large crop to be sure, but much larger than the crops will average in Worcester county. I wish to carry out this experiment without manure, and if the committee will suggest some hoed crop to be put on next spring, not inconsistent with my arrangements, I shall be glad to carry it into effect, and to give them the result, as I design keeping the field in constant cultivation on account of my apple orchard.

I will also give the result of my experiment on the cornfield next above, containing one and one-half acre of land.

1849.	CORNFIELD.	Dr.
May 5.	To 65 loads manure at \$1 25 per load,	\$81 25
" 6-7.	" ploughing, two yoke of oxen and two men, 1½ days, - - - - -	6 00
May 15,	To harrowing same, team half day, -	2 00
" "	" furrowing same, - - -	50
" "	" seed, corn and potatoes, - -	2 00
June-July	" cultivating, ploughing and hoeing three times, - - - - -	6 00
Nov.	To interest on land at \$100 per acre, -	9 00
		<hr/> \$106 75

1849.	CORNFIELD.	Cr.
Oct. 30.	By 30 bushels potatoes, at 50 cents, -	\$15 00
Nov. 20.	" 75 bushels turnips, - - -	9 00
" "	" 95 bushels corn at 75 cents, -	71 25
" "	" 2 loads pumpkins, - - -	2 00
" "	" One-third of manure back for next crop, -	27 08
		<hr/> \$124 33

The fodder in this case was put against the labor of harvesting, and will fully pay, including potatoes and turnip harvest.

This land has been to grass for twelve years, and had been turned over once during this time, and new seeded on the top of the furrow in August, 1844. Nothing more had been done until last May, when 65 loads of manure of 25 bushels each, was carted from the hog pen, spread on the grass, and turned under full 8½ inches, and the sod has never been disturbed since.

This lot was ploughed some thirty-five years since, to the depth of 6½ or 7 inches, when the adjoining lots had not been disturbed more than 4½ or 5 inches; it was at first thought, the land was ruined for all agricultural purposes—but it revived, and for the last twenty-five years there has been a perceptible difference in its products and the land adjoining. The plough

last spring brought to the surface $1\frac{1}{2}$ inches more of the sub-soil than had ever before been brought to light, and still its products have been more than 65 bushels of corn to the acre—by no means a large crop, but a remunerating one. My object in planting this lot, was to prepare the land for an apple orchard and a carrot crop next year. After sinking the large stones on this lot, I intend manuring as usual, and ploughing full ten inches, and putting it to carrots and other roots.

The under drains in my barn lot have worked wonderfully; the water that came near drowning out the brakes in that lot near the surface, now runs freely underneath, and has given place to full 60 bushels of corn, and 300 bushels of turnips per acre.

The 130 rods of drains on the two acre lot that your committee saw when here, have been nearly filled with small stones, with an open drain at the bottom. The water has been running freely in all of them for the last three weeks, to the utter surprise of many of our oldest men, who had known the land for many years before.

SUTTON, 1849.

William S. Lincoln's Statement.

The one-quarter acre of carrots, entered by me for the society's premium, was harvested the 29th of October, yielding by weight, at fifty pounds to the bushel, (the whole crop having been weighed) 9,228 pounds, or 184 bushels and twenty-eight pounds.

The land on which the crop was grown, was "plain land," naturally light, but good—*artificially* poor, having been exhausted by long continued cropping. In the spring of 1848, it was ploughed and planted to potatoes, buckwheat, and corn drilled for fodder. These seeds were put into the ground without manure—the potatoes, because I was anxious to avoid the rot, then so prevalent—the buckwheat, because it needed none, and the corn, because I had none for it. The crop of potatoes was light, but sound, of corn and buckwheat, fair. In the spring of the present year, the land was ploughed as deep as

possible with the common plough, twenty-three cart loads of stable manure spread as evenly as possible upon the whole, (one-half acre) and ploughed under; the ground was subsequently harrowed, and again ploughed, and the seed sowed at the rate of one pound to the acre.

Upon both of these pieces, all the work, save weeding and harvesting, was done by myself personally. I know the land to have been well prepared, and upon the smallest piece, to have been in a much better condition than in either of the two preceding years, during which, it had produced the same crop, and from which, a larger crop had been harvested than was yielded the present year. The one-quarter acre first inspected by your committee, yielded one hundred and three bushels, the other piece, of one-half acre, (part of which I have entered) but two hundred and forty-three bushels and twenty-six pounds.

This light yield is accounted for, only by the miserably bad quality of the seed used by me. It was purchased by me, as "*fresh and genuine.*" It proved to be neither. Early in the vegetation of the crop, the whole of each field bore the appearance of a field of ruta bagas. At a distance, scarcely anything else could be seen, and it was the subject of remark in the neighborhood, till they were cut out at the time of weeding.

There is no probability of mistake in the matter, for the machine was never used to sow a ruta бага seed designedly, since I bought it from the manufacturers. I have alluded to this, in the hope that by my experience, others may learn how little dependence can be placed in the representations of seedsmen. The loss this year, in this immediate neighborhood from bad seed, purchased in each instance, from professed seedsmen, may be fairly estimated at not less than *one hundred dollars.*

Upon a portion of this larger piece, and also upon a part of an adjoining one, I had sowed buckwheat the last year. The committee, I doubt not, perceived the unfavorable appearance of the crop upon that portion which had borne this grain the previous year. At an earlier period of the season, the difference was as perceptible as a fresh furrow would have been, and that too, at quite a distance. What caused it? The land orig-

inally was, to all appearance, of equal quality. From one part, an unmanured crop of corn fodder and potatoes had been taken, from the other, buckwheat. This year, the whole piece was ploughed, manured and tended alike. Whence the difference? Did the buckwheat cause it? It is said to be a fertilizer ploughed under green. Is its effect different if dry? and only (as in this case) the stubble turned in. Will the committee answer?

1849.	CARROT FIELD, (ONE-HALF ACRE.)	Dr.
May 2,	To ploughing—one man and oxen,	\$1 50
" 5,	" 23 loads of manure, - -	23 00
" 5,	" Hauling and spreading the same, -	4 61
" 9,	" Ploughing, self and horse, $\frac{1}{4}$ day, -	50
" 21,	" Harrowing, - - - -	38
"	" Seed and sowing, - - - -	75
June 13,	" Harrowing, - - - -	25
July 6,	" Weeding ten days, - - - -	10 00
" 25,	" " three days, - - - -	3 00
Oct. 29,	" Harvesting, two men two days, -	4 00
	Drawing, - - - -	1 25
	Interest on land at \$200 per acre, -	6 00
		<hr/> \$55 24

1849.	CARROT FIELD.	CR.
By 243 bushels 26 lbs. carrots, at 25 cts. per bushel,		\$60 38
" One-half the manure back for the next crops, -		12 50
		<hr/> \$72 88

The crop entered should be stated differently, and should be charged only with one-half the amounts of these charges, save perhaps, that the proportion should be somewhat larger for harvesting and drawing, so that the account with the crop which I have returned, should be charged only, with half the above amount of manure and labor—say

- - -	\$22 04 $\frac{1}{2}$
Two-thirds harvesting, - - - -	3 00
Interest on land, - - - -	3 00
	<hr/> \$28 04 $\frac{1}{2}$

CREDIT.

By 184 bushels, 28 lbs. carrots, at 25 cts. per	
bushel, - - - - - - -	\$46 14
By one-half the manure, - - - - - -	6 25
	<hr/>
	\$52 39

Upon the one-quarter acre, which yielded only 103 bushels, the net profit, without any credit of manure to next crop, was three dollars and twenty-five cents.

The chairman of the committee will recollect the "*Royal Blue Heart Seedling Potatoes*," exhibited at the society's show, for 1848, by Rev. Mr. Richards, of New England Village, Grafton. Having procured a small quantity of these potatoes, I planted them this spring, upon the *turning* or *head* land of my corn ground, next to where I grew the carrots, before reported. When digging these this fall, I noticed the yield and measured the ground—from two drills, twenty-four feet long, each, I harvested two barrels of potatoes, hardly one too small for the table, and many, of the very largest size. From a piece of ground sixty feet, averaging twenty-three feet, the above included, I dug six barrels, heaped measure. This potato, I think, (aside from its color, which is very dark throughout,) among the most valuable of the many varieties cultivated.

WORCESTER, *November 9th*, 1849.

William A. Wheeler's Statement.

I herewith hand you a statement of the expenses and product of carrots upon one acre of land, on my farm in Worcester, during the year 1849, and which are entered for premium.

1849.	CARROT FIELD.	DR.
May 16,	To labor of carting and spreading manure, 8 days, - - - -	\$ 7 33
"	To labor of team 4½ days, - - - -	4 75
" 16, 29,	" " team ploughing 4 days, - - - -	4 00

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May 31,	To labor of men ploughing, 4 days, -	\$3 67
" "	" " " preparing beds 5½ days,	5 04
June,	" " hoeing, weeding and thinning,	11 92
July,	" " " " - - -	16 50
Sept.,	" " pulling weeds, - - -	3 21
Nov. 14,	" " harvesting 33 days, - -	30 25
		<hr/>
	Amount for labor, - - -	86 67
May 16,	To 32 cords weak compost, at \$2, -	64 00
" "	" Seed, - - -	2 50
		<hr/>
	Total expenses, - - -	\$153 17

1849.	CARROT FIELD.	CR.
By 1,066½ bushels carrots, at 25 cents, - -		\$2,266 62
" Tops sold, - - -		7 00
		<hr/>
	Gross proceeds, - - -	\$273 62
	Expenses brought forward, - -	153 17
		<hr/>
	Net profit, - - -	\$120 45

The acre of ground was divided into eight beds, and four cords of compost put upon each bed. The whole was ploughed twice, the first time as deep as possible, with a large plough and three yoke of oxen.

The product of each bed was as follows :—

1st, 117 bushels,	5th, 132 bushels,
2d, 124 "	6th, 142 "
3d, 127½ "	7th, 145 "
4th, 131 "	8th, 148 "
<hr/>	
Total, - -	\$1,066½

Showing as the largest yield on one-quarter of an acre, 293 bushels. The ground is the same as I have used for six years last past.

WORCESTER, 1849.

Benjamin N. Childs' Statement.

Agreeably to the requisitions of the society, I hereby make a statement of facts relative to my ruta бага turnip crop.

1st. The general state of the land in 1848? Answer,—medium.

2d. Manner of cultivation in 1848? Answer,—usual method.

3d. Product and quality of manure used in 1848? Answer,—about ten loads to the acre, coarse manure.

4th. The product of the land in 1848? Answer,—about 40 bushels of potatoes.

5th. The condition of the land in the spring of 1849? Answer,—

6th. Quantity and quality of manure used in the present season? Answer,—six loads of green manure spread, and two loads in drills.

7th. Mode of cultivation preparatory to sowing? Answer,—ploughed twice and harrowed once.

8th. The quantity and quality of seed used? Answer,—one pound good seed to the acre.

9th. Time and manner of sowing, weeding and harvesting? Answer,—sowed June 20th, by hand, hoed and weeded twice, harvested November 3d.

10th. The amount of produce? Answer,—12,000 pounds, or 240 bushels.

11th. The expense of seed, manure, labor, &c.? Answer,—seed, twenty-five cents, manure, \$8, labor, \$7.

12th. The value of product? Answer,—240 bushels, at twenty-five cents per bushel, \$60.

WORCESTER, *November 3d*, 1849.

ON ESSAYS.

The committee received an essay on the "Means to be used to create a deeper interest in the cause of Agriculture," written by the Rev. T. D. P. Stone, the chaplain and principal instructor of the "State Reform School," to whom they award the premium of \$25.

They also received another Essay, written in a fine fair female hand, to which they would gladly have awarded a second premium if they had been authorized so to do. In a note accompanying it, over the signature of "ALICE LISLE," it is stated that "it was written in the intervals of domestic duties by a *young farmer's wife*." It contains many valuable suggestions, but the committee do not think they are authorized to publish portions of it without the express assent of the fair writer.

The committee met for the discharge of their duty, at Westborough, and availed themselves of the opportunity of visiting the State Reform School, and were highly gratified with the arrangement and good order of the establishment, the behavior of the pupils, and with the improvement now in progress in the arrangement and management of the land. A very convenient barn has been constructed and favorably located to accommodate the different parts of the farm—large preparation to manufacture manure, has been made, and with the labor of the pupils, this may be a model farm for the instruction of the agricultural community, and may prove to be one of the most benevolent institutions in the Commonwealth to the inmates, and highly useful to others.

JOHN W. LINCOLN, *Chairman*.

AN ESSAY ON THE "MEANS TO BE USED TO CREATE A DEEPER
INTEREST IN THE CAUSE OF AGRICULTURE."

By T. D. P. STONE.

The success of past efforts is a strong argument in favor of their being continued, and that with an increase of zeal. What *has been done* to awaken thought, secure capital, and induce experiments for the advancement of our agricultural interests, not only shows what *may be done*, *must be done*, and *will be done*,—but *how to do it*. The press is to teem with new incentives to till the soil and to increase its products. The State and county society and local association is still to exert its ap-

propriate influence on the public mind. Wealth is still to exchange *bank* stock for *neat* stock, city rents for country farms, and become as much interested in *books* of *pedigree* as in *factory ledgers*. Legislative agricultural meetings are still needed, to show the community the true importance of the farmer's calling. Not one of all the appliances which have tended to awaken *present* interest in the arts of the plough, can be spared from the array of means requisite to secure a still *deeper* interest. *Their* full power demands the lapse of centuries for developement. And all other means within our reach will increase the influence of those which are now employed. Progress must be the watchword of the farmer, or he will soon fall into the rear. If in his anxiety "not to remove the old landmarks," he takes care to do all things as his father did,—the children will take care as soon as they come of age, to quit the homestead and the farmer's toil. New England cradles inspire souls with an energy which cannot rest contented without "*seeing things improve*." The spirit of "'76" is in our young men. They have no revolutionary struggle to bear. Presidential elections occur but once in four years. There is little to stir up their souls and give play to their talents in the good old round of chopping, planting, haying, harvesting, and then chopping again. Under that system they tire, and look abroad for clerkships, trades, or El-Dorado's in California. But let their *ambition* cling to the plough, the dairy, the nursery, the fold, the stable, the sty, or even the fowl-yard, and it can find full scope—and they will probably *remain* farmers.

In order to secure such a result, we must labor more to reach the *masses*. New discoveries in agriculture, like heat, are slow in their downward progress. It is many a year before a new plough, or a new crop can be generally appreciated, as community is now organized. There is too wide a distinction between your *genteel wealthy* farmer, and the *working* farmer. Yet it is to the latter that we look for the largest proportion of our produce. He must be interested in the advancement of agriculture, or all the efforts of others will be vain. This class constitute the "bone and muscle" of our community. The

suggestions of this paper relate to the promotion of deeper interest in agriculture, in *their minds*.

The measures of political leaders suggest the means which will be first proposed. Every election campaign witnesses the careful selection of party orators whose voices reach the retired hamlet as well as the city hall. Newspaper editors, and book-sellers employ lecturing agencies to awaken interest in their business. Temperance societies reach all classes by similar instrumentalities. We all know the power of personal appeals upon religious topics, when in the large assembly the preacher brings each auditor under the influence of his voice. And agricultural meetings of every kind are rendered attractive to multitudes by their public discussions and addresses. Then let this idea be carried out in systematic effort for this express object. Let lectures and discussions on the farming interest abound. Reach the masses through mass meetings, on this subject as well as on other subjects. Would not lectures on soil, on plants best adapted for culture and for food, on animals and their wants and natural habits, and on kindred subjects, be well patronized? Would not such lectures by men of known worth and skill in their theme, have great influence? Would it not be well for our agricultural societies to institute, or at least, encourage such efforts? Is not the subject worthy of this kind of attention? Is there not a vast fund of practical information which will not reach the masses in any other way? How powerful would be the impression of diagrams and drawings, models, and practical experiments in the hands of able lecturers. How profitable as well as interesting, the recital of facts bearing upon this great subject, which have been collected from extensive reading, travel, and experiment. How would the combined wisdom of distant and dissimilar people, be made to bear upon our gardeners and our farmers. That great Roman heart which seemed to long for true progress in the empire which it swayed, felt that imperial munificence should tempt Virgil to incite all classes to agricultural pursuits. It was one of the glories of the age of Augustus, that the practical lessons of Virgil's Georgics were so highly and so generally prized. That fact had its full share of influence in staying the

curse of war. And neither poetry nor eloquence can be spared in our age from the service of the plough. Let an attempt be once made in earnest to draw audiences together to listen to good agricultural lectures, and it is believed, more will be effected for general improvement in farming than could be secured in any other way, at so little expense. Such lectures should be delivered in all our towns to accomplish their object. The periodical addresses at the cattle show do not reach all who could and would hear local addresses nearer their houses.

It is suggested, secondly, that more attention might profitably be paid to agricultural studies in our common schools. Who would conjecture from our reading books, that the pupils using them belong to farmer's families, to a great extent? How lean is our school literature on this subject. Why should not practical information respecting soil and vegetation be deemed as worthy of study as the human system? Yet multitudes study the school book on anatomy and physiology who never see Gray's, or any other author's school book on agricultural chemistry. It would be no loss to mechanics' sons to learn to plant gardens. An early interest in such work would not tend to increase street riotings or roving boys. Would it not be easy, by suitable efforts at school, to induce even children to anticipate rural employments with joy, and voluntarily to commence them in the flower bed, if not allowed a wider garden range. The minds of children who have grown up amid the fascinations of good husbandry, and been sent to school where the clustering vine and smiling flower adorned their school room, never tire, in after years, of the employments of their childhood. In "distant lands, where foreign summers glow," the Swiss remembers his home, and delights in the same kind of labor which covers his native soil with verdure. The picture of some of the European public school establishments is certainly suggestive to our yankee spirits, prone as we are to "invent every thing that is not invented," and use every thing which is invented. There stands the teacher's cottage, with its fruit trees, and garden in near contiguity to the school building, with its play ground, and flower yard, where children vie with each other in the production of rich bouquets to adorn the school

room. Why should not our New England schools, so justly our pride, so truly our defence, impress young minds with a taste for cultivating fruits and flowers? Does not the very location of our schoolhouses near old pastures, or neglected orchards, or under forest glooms, or beside grave-yards, or, at best, in the most retired and useless spot in our villages, tend to disgust young minds with every thing connected with farming, and lead to an early wish to migrate and become any thing but farmers. Our Maker has given children a taste for the beautiful. He has given to cultivators of the soil the power of rendering their fields, and orchards, and gardens beautiful, without detracting from their profits. Still, the farmer rarely thinks of any thing but profit, and regards attention to taste as so much wasted effort. "Flowers," said one of Hodge's descendants, "Flowers are curses, young gals will stick 'em into the ground, and afore they are big enough to make butter or weed onions, the paltry yellow and red, and speckled blossoms will be peppered like Canada thistles, all over the garden patch, and whole home lot." But Hodge, with all his hostility to flowers, does not receive larger profits than his neighbor, whose grapery and tomato-bed, and fowl-yard, and hive-house, increase his cash as much as they add to the beauty of his premises, although their mutual arrangement amid roses and dahlias have the appearance of a mere pleasure garden. Hodge will have to look for his children, bye-and-bye in some city, while the latter family mentioned will only have remained, like the people of the apiary, to occupy and adorn contiguous homes, and give to the whole neighborhood the aspect and fragrance which enchanted their young years. When we look at the utter want of regard to the idea of rendering agriculture attractive in our common school arrangements, we must cease to wonder that there is so much migration from our favored State. We call it the spirit of adventure. Is it not, in part at least, the spirit of disgust? How then shall a change be brought about? It must be the work of time, whatever plan may be adopted. Several distinct points are to be gained. Some of these will be reached by the persevering application of measures now employed. For others, new means are demanded. What is now being done to arouse

attention will show community the importance of introducing into our schools, better text-books, or rather *some* text-books on farming. The same influences will act in a degree upon the selection of schoolhouse sites, and lead our districts to avoid the vicinity of a poorly tilled farm, as they would proximity to a stagnant and undrainable bog for the spot where "young ideas may shoot." But all this will not provide teachers interested in the soil. It is suggested that we need in each of our counties, a *good agricultural school, of high order*. The remainder of this essay will be devoted to the discussion of these questions: *Why is such a school demanded? What should be its plan? And how can it be started and sustained?*

1st. Why is such a school demanded? To secure *deeper interest in agriculture* in the *teachers of district schools*. Our schools receive a tincture from our academies, as our academies do from our colleges. Colleges furnish many of our academies and high schools, as well as district schools, with teachers, from among the undergraduates. These come from a literary atmosphere, and give such a cast to their instructions. They prefer to teach "higher branches." They regard labor as beneath them, in nine cases out of ten. This is one of the inevitable results of our present system of college training. What interest can they be expected to throw around the study of agriculture? Have we any reason to expect from them, hints, remarks, and illustrations designed and adapted to elevate the employment which they *neglect*, if they do not *despise* it? Our school teachers generally have no inclination to spend their energies upon such efforts, and, such is the state of public opinion, that they would not venture to attempt it, if they wished to. Our committees could not be expected to sustain them at present. But let our teachers come from under the influence of minds which appreciate the importance of our agriculture, and labor by lectures, and at recitations, and in social intercourse to render its employments interesting, respectable and profitable in the opinion of their pupils, and such efforts will be imitated when those pupils come in their turn to fill the teacher's desk. If it be asked why we should not rather seek to so modify existing schools as to meet this want, why not introduce such in-

struction into teacher's seminaries and Normal schools? The answer is, that while it is desirable to do so to some extent, it is also in many respects impracticable to combine the two great objects in such establishments without neutralizing both. Our normal schools are to develop true ideas of *teaching*. They act upon community by exhibiting and impressing upon public opinion what correct instruction and good discipline are. They are not expected to educate *all* our teachers. Far from it. If one-tenth, or one-twentieth of them secure improved views and practice, there will be an ample equivalent for the expense of sustaining normal schools. And if the same, or even less proportion of our teachers were to become interested, and qualified to infuse agricultural elements into our common schools, the whole State would be improved in these respects also. The pupils of normal and the pupils of agricultural schools would influence each other, and influence others, perhaps *even some* of those from *college*. Again, agricultural schools are needed to improve the intellectual state of the farming population. Let them feel that there is a school for *them*, and our farmer's sons and daughters *will* attend it. A large number who would otherwise never attend a high school or academy, will save enough of time and money to secure, at least, several months of study under superior advantages of society and of instruction. We need such means to call out our youth into society, before they settle down for life in the retirement of the farm. What an advance of real mental and moral worth might thus be secured, in addition to the acquisition of some of those little civilities of fashionable life, which would secure a degree of happiness in the social circle, too often unknown among awkward Jonathans. The time is past when education and good manners are to be deprecated as injurious to crops,—when a man's agricultural skill is to be estimated as some estimate their compost heaps, by the degree in which they disgust and offend. Let our farmers and our farmer's wives, be all of them well educated and polite, and this alone would enhance every kind of property in value throughout our country. And nothing could better promote this object than the establishment of agricultural schools, which farmer's children should feel to be theirs by right.

2dly. In offering suggestions as to the plan of such a school, the writer's ideas may differ, somewhat, from many of the generally received of the community on this subject. His experience as an instructor, (at the head of several academies, male and female, at times in the very centre of a farming population,) has taught him that what is popular, is not always useful, and that great expense is not always attended with greatest profit.

He would suggest then, first, that the plan of such a school should be economical for the pupil. Gentlemen's sons may pay large tuition, perhaps, but farmer's sons will not do it. Theory may argue that they will. But experience proves that they will not. Although such an establishment demands abundant apparatus and the best of instruction, yet if its expenses come heavy to the pupil, the school will not be filled with those for whom it is intended.

Secondly, such a school should be located where all prominent features of good tillage are practically and successfully exhibited by the various farms in the vicinity. Besides constant allusion to the school farm, embracing various forms of culture under his own eye, let the teacher be able to refer to Esq. A.'s bog reclaimed—Capt. B.'s barn,—Col. C's compost plan, &c., and the pupil will learn more from this reference than from looking only at ever so perfect a model made to hand, for experiment's sake, on the model farm. And in this way, not a few good lectures of a new kind would be introduced to the pupil. Farmer Thrivewell, standing by the side of his yearlings, will be lecturing on the qualities of good cattle, in an eloquent strain, while if he stood in the teacher's desk, he would do nothing but exhibit awkwardness. Every visit to the farm in the neighborhood, by chance with the teacher, would lead to increased efforts on said farm, and give practical ideas which could not be obtained in any other way. As to the general plan of study, it is suggested that it should be eminently practical. Pupils should bring up the neglects of district schools. They should learn to write a fair letter, and make out a fair bill, and converse intelligibly, as well as to plant, sow and reap scientifically. But beyond this idea of practical instruction, no change need be made from the usual

academical course, excepting such as the very object of the school suggests.

Whether such a school be a state affair, or the result of a private munificence, whether it be conducted on a large scale or not,—with other kindred questions, it is left for others to decide.

Thirdly. In regard to the question, how can it be started and sustained, one remark only is offered, viz. : “where there is a will there is a way.” The Worcester County Agricultural Society has only to say “let such a school be,” and it will be and continue to be, a blessing and an honor to the Old Bay State.

HAMPSHIRE, FRANKLIN, AND HAMPDEN AGRICULTURAL SOCIETY.

The Cattle Show and Fair of this society, was held at Northampton, on Wednesday and Thursday, the 10th and 11th of October last. On account of the threatening aspect of the weather, or for some other reason, the crowd of people did not appear to be so large as usual on these occasions.

The show of cattle was inferior, in respect to numbers, to that of many former years, but the quality of the animals would not suffer in comparison with those of any preceding exhibition. There were but two town teams—one from Easthampton, of twenty-six yoke, and one from South Hadley, of sixteen yoke. Both took the highest premium, the one for the greater number, and the other for the better quality. Of swine, there never has been a better exhibition. Through the efforts of the Northampton Horticultural Club, the variety and number of specimens of apples, pears, grapes, and other fruit presented, would have done honor to any similar exhibition, in the best fruit-growing districts.

On Thursday, the rain fell in torrents, and the show of horses was, therefore, much less than it would have been on a fair day. Forty entries were made, but not all the horses entered, were present for inspection. The examination was made under the roof to the South Street Bridge. This afforded shelter from the rain, but it was a poor place to show horses to advantage. The address was delivered by Professor John P. Norton, of New Haven.

ON DOMESTIC MANUFACTURES.

Were we desirous of forming the most correct general estimate of a people, or of any section of the community, and if,

in our inquiry, we were restricted to one interrogatory, what would that one be? We think it would be—"Are they industrious, or are they idle?"

Industry is the parent of virtue, idleness is the progenitor of vice; and in proportion as the one or the other, is the characteristic feature of a people, will its moral position be high or low. It is no unmerited eulogium on New England, to affirm, that her prominent characteristic is industry; and although it is to be feared that she may include among her sons, some who deserve the unenviable epithet of *loafers*, this is but the exception that proves the rule, and that, as a general thing, the sons and daughters of a New England household, all do something to enrich the family store, and make up the aggregate of domestic abundance which is so largely enjoyed.

The characteristic industry of the New England population, may trace its paternal and maternal descent to the first puritan settlers; of whose divine guidance in the conception and prosecution of their arduous, but successful enterprise, it is a signal proof, that they were destined to land on a barren and inhospitable shore, where all their energies were required, in order to procure the bare necessities of life. And when we reflect on the unparalleled difficulties they had to encounter, and the wonders they were enabled to achieve; when we call to mind their "day of small things," and the mighty results that have succeeded it, we are insensibly reminded of the lines of Cowper:—

"Behind a frowning Providence,
He hides a smiling face."

Had the early settlers found themselves in a land where little toil or personal exertion was necessary, in order to secure the comforts, or even luxuries of life, it is but too probable, they would speedily have lost all traces of those peculiar virtues, which their descendants in this State, hold in such affectionate veneration, as to devote one day in every year to their especial contemplation; and those descendants would, consequently, have been a people among whom it would have been in vain to have looked for such exhibitions as our eyes have feasted on to-day.

It is our good fortune to live in a part of the State where nature has been so bountiful of her gifts, that much time is left to our sons and daughters for mental cultivation, and leisure is still afforded for the attainment of those accomplishments, which, like the ornaments of the Corinthian column, add grace to the structure, without impairing the solidity of the edifice.

Delightful is the contemplation of a family group, where all the members are engaged—after the imperative duties of the day are fulfilled—in the different pursuits that are congenial to their respective tastes; and happy—thrice happy those who have attained the conviction, that the quiet joys of home infinitely transcend those artificial ones, which the thoughtless seek abroad, and not unfrequently, under circumstances prejudicial or fatal to a reputation, of which they know not the value, until it is too late to retrieve it.

It is doubtless, in a great measure, to evenings and other portions of leisure, acquired and spent in the way first mentioned, that we are indebted for the production of the many elegant specimens of art, we have had the privilege of beholding. As the different articles, which it was the province of the committee to inspect, passed under their review, it was pleasing—nay, it was matter of exultation, to perceive, that while there was a handsome display of those of purely domestic, or household manufacture, there was an accession of others that spoke highly of the inventive genius of our fellow citizens, and proved most satisfactorily, that they are not behind their cotemporaries in scientific or artistic advancement.

The individual who has had the honor to be deputed by the committee, to present the report, having been born and brought up, or, as the western phrase is, *raised*, in the old country, has had opportunities of comparing the domestic economy of the agricultural districts there and here; and although it will naturally be supposed, that whatever bias he may have, is in favor of his father-land, yet the paramount obligation he owes to truth, compels him to admit, that he never witnessed in England, such varied exhibitions of domestic thrift, nor such palpable manifestations, that the hours of well-earned relaxation from the severer calls of duty, were happily and beneficially em-

ployed, as he has done on occasions like the present, in this, and the adjoining state of Connecticut.

Of undressed flannels, there was the best exhibition any member of the committee remembered to have seen. The first premium, was awarded to Mrs. Edwards Clark, of South Deerfield; the second, to Mrs. F. M. Clapp, of Southampton; the third, to C. W. Bement, of Chesterfield. Of dressed flannels, there was only one piece exhibited, and for that, which was a most superior sample; the first premium was awarded to Mrs. C. Waite, of Whately.

There were fourteen entries of floor carpetings, the display of which was excellent throughout. The first premium, was awarded to Mrs. Maria James, of Goshen; the second, to Mrs. O. E. Abel, of Williamsburg; and gratuities of two dollars to Mrs. J. Eden, and one dollar each, to Mrs. Isaac Davis, of Northampton, and Mrs. W. C. Ferry, of Easthampton.

There were nine exhibitions of mechanical skill. Of these, were specimens of E. W. Fenton's flint enamelled stone ware, exhibited by G. W. Benson, of Northampton. It is an article of recent invention, of great beauty, convertible into a variety of shapes, and adaptable to numberless purposes. In pattern, it somewhat resembles tortoise shell, but far surpasses it in polish. The committee recommend, in respect of it, a gratuity of two dollars. The horse rake, exhibited by Daniel Goodwell, of Hadley, was highly praised. The committee were struck with the nice manufacture of a sap tub, offered by S. Blake, of Ashfield. It was accompanied by a very modest letter from the maker, who appears to be a self-taught young man, who works with tools of his own making, and has made about two hundred of them in his intervals of leisure.

Highly finished specimens of fancy buttons, not to be surpassed in beauty, were exhibited by Samuel Williston & Co., of Easthampton; and beautiful specimens of different kinds of writing paper, from the Eagle Mill of William Clark & Co. This extensive establishment embraces the manufacture of every species of best writing paper, and from a careful examination of the samples presented, the committee do not hesitate to say, that it will sustain an honorable competition with any

similar establishment in the country. It affords employment and subsistence to upwards of one hundred people.

JOHN EDEN, *Chairman*.

MILCH COWS AND STEERS.

The committee on milch cows regretted to see so small a number exhibited,—smaller than has ever been offered before, for the premiums of the society. It would have been gratifying, had there been certificates, in writing, of the pounds of milk given by each of those presented, through the months of June and August, as it would have relieved the committee of the difficulty of judging, under the unfavorable circumstances, of some of the cows being not as well milked as they should have been, on the morning before the exhibition.

The committee would recommend, that each individual who offers a cow, or cows, for the society's premium, should know, for a certainty, what each cow produces, for a month or two months; and that a written certificate of the age and breed, whether native or imported, and of the quantity of milk and butter, as well as the keeping they have had during the time of testing their qualities, should be given.

This part of the show presented a better appearance than in former years. The animals were larger, and better matched. There was awarded

To Harvey Judd, of South Hadley, first premium, \$8 00

Mr. Judd's three year old steers weighed three thousand two hundred and thirty pounds, and were very superior.

ELISHA EDWARDS, *Chairman*.

HORSES.

The committee are pleased to observe the continued attention paid to the breeding, rearing, and training, of these useful and noble animals. The goodly number of animals on exhibition,

for the last two or three years, and their general excellence, is sufficient evidence that our farmers are giving to the subject, an attention more in proportion to its importance than formerly. The committee would take this opportunity to offer a few suggestions, as to the kind of horse most worthy of breeding amongst us.

Time was, when a class of men, very appropriately called croakers, were bewailing the introduction of railroads, as likely to supersede the use of horses, and make them hardly worth raising. This prediction has been abundantly falsified, as they are still in good demand, and bring excellent prices. We admit, however, that the multiplication of railroads may have affected, to a certain degree, the raising of horses; making it a matter of more importance, now, to raise a good horse, than a poor one. Formerly, an awkward, a dull, or even an unsound animal, provided he was good for draught, would find his way to some one of the numerous teams that traversed the country, and bring a fair price. Now, however, our produce and merchandize are chiefly transported by means of railroads, the demand for such horses is more limited, and they often find but a poor market. This can hardly be called an evil, since it stimulates to improvement. What we most need, at present, seems to be a business horse; one that shall be kept, not for show, merely, nor yet for a drudge, but suitable for the lighter farm work, and for the road. Such a horse should be of the medium size, compactly built, clean in his limbs, of an easy, graceful carriage, docile and kind in his disposition, hardy, and of good performance on the road. Nor is it deemed impracticable, to cultivate such a breed within the limits of this society. There is already great improvement visible, but no one will pretend to say, we have yet attained to perfection. We are aware it is often objected, that our horses are made to do so many kinds of work, as to make it impossible to produce or keep up a breed, possessing marked excellence. But to this it may be answered, that in the State of Vermont are raised, as is well known, some of the best horses in the country. What should prevent us from raising as good horses here? Certainly, nothing but want of care and attention. In our hill towns,

oxen are almost always kept for the heaviest work of the farm ; and there seems to be no good reason why there, at least, the breeding of horses, such as we have described, may not be successfully and profitably pursued.

In order to success in this, as in every other business, there must be care and good management. Three things, particularly, seem to be of great importance, if we would make any valuable and permanent improvement. In the first place, there should be *good blood*. The value of this is obvious, and need not be enlarged upon. If any one is in doubt on this point, and wishes to know the truth, we can recommend nothing better, than that he should try an infusion of the blood of some notedly good breed, with our common stock, so as to satisfy himself from personal observation. We are confident, that the result would be a solution of his doubts, and a confirmation of the truth of our remark. Next to good blood, if, indeed, not before it, comes a *sound constitution*. Want of attention to this, has been, and still is, we believe, a fruitful source of feebleness and disease amongst our horses. That like produces like, seems to be a law holding good throughout the animal and vegetable creation, and subject, perhaps, to as few exceptions as any other law, of so general application. The various and wonderful improvements made of late, in the cultivation of fruits, flowers, vegetables, the cereal grains, and also in the breeding of all kinds of domestic animals, are founded in a regard to this law, and without it, could not be sustained. It should be remembered, that it is a law holding good with regard to feebleness of constitution, if not actual disease, many times, as well as to form, color, and disposition. It is not uncommon, to see a mare that has done good service in her younger days, and was looked upon as too valuable for a breeder, when broken down in a measure by age, and perhaps disease, put to the raising of colts, because, at a former time, she had been a valuable animal. If a course so at variance with nature and common sense, were persisted in, it would produce, in the end, nothing but disappointment and vexation. One of the committee recollects an instance, within his personal observation, in which a colt, after having been kept two years,

became almost entirely worthless ; and solely, as he believes, owing to the unsoundness of the dam. But neither constitution nor blood, in the parents, will avail to entire success, unless proper attention is paid to the offspring. There is often mismanagement as gross here, as that mentioned above.

The horse is naturally a more delicate animal than the cow or ox, and requires better food and shelter to make him equally comfortable. But how seldom does he get it, in his younger years, when he most needs it. If the practice were not cruel, it would be amusing, to witness the course pursued by some people, in order to produce what they call a tough horse. They will be careful, in the first place, that he does not run with the mother too long, for fear, perhaps, that if he is not taken off young, he will never learn how to eat. During the winter, they will see that he is exposed to a good number of storms, together with winter winds sufficient to give him strength of constitution. Or, if he should be favored with a stable, it is never cleaned, and he is obliged to stand with his heels as high as his head, lest he should get the ring-bone ; and a card or a currycomb is on no account to be used upon him, lest it should make his skin tender. With regard to food, their practice corresponds wonderfully with the prescription of an eminent physician, formerly well known in this town, to dyspeptics. Said he, " You should take a very light breakfast, not much dinner, and no supper." If, as a natural consequence, this poor Oliver Twist of the brute creation becomes poor and infested with vermin, and some one should suggest the propriety of more nourishing food, he would be met with the reply, that it would never do,—that if you began to feed well, you will have to continue the practice. If a colt lives through all this, it is granted that he is tough ; but whether he will last as long, or perform as well, as if well fed, seems more than doubtful. The probability is, that, at the age of four years, he will exhibit the tameness of spirit, and jaded appearance, of a drudge of fifteen.

As a breed combining, in a remarkable degree, the qualities desirable in a horse for general use, the Morgans stand high in the popular estimation. Their lofty and elegant action, their activity, hardiness, gentleness, and docility, and their adapted-

ness for all work, have made them general favorites, wherever they are known. The origin of this breed was for a time involved in some obscurity, and several different accounts have been in circulation respecting it. Among others, an idea has prevailed, that there is a mixture of French blood in the breed. For this there appears to be no sufficient authority, as in the most reliable accounts we have, nothing of the kind is mentioned. In a communication to the *Cultivator*, of January, 1846, made by F. A. Wier, of Walpole, N. H., the pedigree of the old Justin Morgan horse is given, on both sides. If this account is correct,—and there seems to be no reason to doubt it,—the Morgans partake largely of English blood, particularly of a breed called the *Wild-air*. What peculiar combination of qualities it was, that enabled the original of this breed to stamp his own character so strongly on his progeny, it is impossible to tell. That, occasionally, animals appear among all descriptions of stock, possessing this power to a remarkable degree, we cannot doubt. It will be recollected, it was the famous bull, Hubbuck, that laid the foundation for that splendid series of improvements, which has resulted in the unrivalled symmetry of form, size, and aptitude to fatten, which characterize the present race of improved short-horned Durhams. It is the part of wisdom in us, whenever this power appears, connected with other desirable qualities, to cultivate it with assiduity and care.

The number of entries of horses was forty, viz. :—four stallions, twelve pairs working horses, thirteen geldings, four breeding mares, four three-year old colts, two two-year old, and one yearling.

T. G. HUNTINGTON, *Chairman*.

ON PLOUGHING.

The land selected for the trial, was a piece of firmly matted green sward, the general surface of which was level, though some portions of it were considerably uneven, from having been imperfectly laid down. The whole was rather heavy, from the recent rains. Eighteen competitors appeared upon the

field ; seventeen with horses, and one with an ox team. Of most of the teams, the ploughmen were themselves the drivers.

The teams were well broke, and very manageable, and some were of such marked excellence, that we could not keep our eyes off them. Some of the colts were a little nervous, probably from being in close mesmeric communication with their drivers, especially when they were nearing the last, or land finishing furrow ; but all must have admired the steam engine like vigor and steadiness, with which the older animals went through their work, even to the last *shaving*.

The ploughs were of the most approved modern patterns, and every ploughman seemed to be perfectly the master of his instrument. We could not, when viewing the beautiful and almost perfect equipment of these ploughmen, but recall those formidable *turn-outs*, which would have been required to do this work, in the early days of this society. Then you would have seen the farmer's ox and horse teams, hitched together to a formidable wooden machine, covered with broken plates of rusty iron, with two crooked sticks jutting out behind, by which the thing was, by main strength, held down to the work. You would have seen it move, and scarcely move, along ; wrenched right and left, with a giant's strength, to facilitate its winding way through the astonished sod ; with the stalwart farmer himself,—no *boys* were then permitted to touch a plough,—resting half his weight upon it ; his nether extremities spread out to their utmost extent ; his left foot balancing along the land-side, and his right jerking violently and regularly into the face of the half-turned furrow, to make it lie still. By the side of the team, you would have seen the oldest boy of the ploughman, armed with a walnut or hardhack sapling, selected from the forest for its great length and beautiful taper, with which he would belabor the jaded team, with constantly increasing spirit, and constantly diminishing success ; while upon the nigh horse would be seen the youngest boy of the family, their hope and their pet, raised to his elevated position by artful appeals to his pride of horsemanship in the morning, and already, before noon, become a *sore subject*, and suffering, before night, the tortures of a thousand martyrdoms. You

would have noticed this sad procession, stimulating its slow progress by such unearthly outcries, as nothing in modern times, unless it be a charge of Mexican cavalry, can be found to compare with it.

But how would it, how did it, rejoice the hearts of these old farmers, to look upon such a piece of work as that of to-day; the easy and rapid movements of the teams, the quiet and graceful management of the ploughmen, the silence, and the quantity, and more than all, the quality, of the work done. Some of the committee have been present at every ploughing match since the formation of the society, and they say, that no such near approach to perfection, in ploughing, has ever before been attained; and,—not to compare ourselves wholly among ourselves,—others have attended similar trials, in different and distant parts of the country, and all have read of the mode of doing such work in other countries; and we do not hesitate to say, that the world may be safely challenged by your eighteen competitors of to-day.

Much discussion has heretofore been had, here and elsewhere, as to the best mode of turning and leaving the furrow, in ploughing; some contending, that the edge of the sod should be left upwards, and others, that it should be completely reversed, and the turf wholly covered. The committee are unanimously of opinion, that the latter is the true way, in green sward ploughing, at least, as it secures the more perfect decomposition of the sod, and leaves a smoother surface for the crop. We were pleased to observe the successful practice, upon this principle, by all the ploughmen, to-day. In most of the specimens, there was such a mathematical regularity in the straightness of the furrow, and in the width of the furrow slice, as could hardly be exceeded by a joiner or cabinet maker, in his nicest work; a result which could not have been produced, but by the best ploughs, in the hands of those, in whom accuracy of eye, delicacy of touch, and strength of arm, are in rare combination.

OSMYN BAKER, *Chairman.*

ON PLOUGHS.

The executive committee, to whom was referred the subject of awarding premiums on ploughs, submit the following report :—

The plough lies at the foundation of agricultural progress, and any improvement in its construction or use, diminishes the cost of production, and is so far, beneficial to all who eat bread. Good crops depend upon good ploughing, as good ploughing depends upon good ploughs. The object of ploughing, is to fit, or prepare the ground for seeding or planting, and the plough that does the most towards accomplishing this preparation, at the same expense, is the best plough.

With a view to the trial of ploughs, the committee had provided a dynamometer of the most approved construction, with a stationary power for moving the plough, and other apparatus for obtaining the weight of the furrow turned, which, altogether, were deemed capable of giving, with nice precision, the amount of work performed by each plough, and the amount of team labor expended in performing it; facts, which would at once show the comparative economy of using the different ploughs submitted to the test, and assist the committee in coming to a correct decision in the premises.

The ploughs submitted for premium, comprising not less than ten different sizes, and adapted to different soils, were all of one manufacture, from Messrs. Prouty & Mears, of Boston, and constructed, as they claim, with a view to the "centre-draft" principle. No other competitor appearing on the field, the committee were left to judge on the merits of these ploughs, by submitting them to the test of the instruments provided for that purpose, and by comparison with other ploughs called good, but not offered for premium, and by following them in the furrows for several hours on three several days, as their meeting was adjourned from time to time, and with the further aid of the considerable personal experience of several members of the committee in plough-holding; and witnessing their light draft, easy holding, and excellent work, the committee were unani-

mous in awarding to Messrs. Prouty & Mears, the society's premium for the best sward plough.

Of the different sizes of "centre-draft" ploughs, put into their hands for trial, the committee recommend, as a plough for all work, the No. 5½, S. S., as the best plough within their knowledge. Of easy draft, it turns the sward most perfectly, and in a clear, free soil, preserves its furrow without a holder; and if the ground is in the best condition for ploughing, nearly prepares it for seeding, by its peculiar shape, and turn of share and mould-board, which pulverize and disarrange the particles of the furrow slice, and consequently, aid fermentation and decomposition, and the elaboration of food for plants, from the organic matter in the soil; all at much less expense than the same point is obtained by the harrow, and in perfection, perhaps, fully equal to that "spade husbandry," which has been termed "the perfection of good culture."

In stubble land, the work of this plough was found to be very good, and with the aid of a light chain, made fast, one end near the plough clevis, and the other to the right hand whiffletree, with sufficient slack chain to sweep the ground, say, one foot in advance of the plough, the stubble was entirely covered in, and the work pronounced to be of the most perfect and satisfactory description. This plough is a self-sharpener, and of full medium size, suitable for a single team, and, in the opinion of the committee, should be owned by every farmer who keeps but one plough, until it is superseded by a better one. Its self-sharpening point and share add very much to its value, by saving, perhaps, one-half the expense of repairing, necessary with the common plough point; and this, together with the additional tilth, or pulverization given under favorable circumstances over the smooth, hard, flat furrow plough, superseding, or greatly reducing the immediate use of the harrow, may be safely said to amount to an ultimate saving of more than the whole first cost of the plough. To follow this plough, is to like it.

Plough No. 25., is a trifle smaller than No. 5½., and in comparison with the weight of sod turned, is rather the lightest draft of any plough brought forward at the trial. It holds

easy, turns a smooth, flat furrow, and may safely be recommended to those who prefer that kind of work, without regard to pulverization, as the best sod plough for a single team. Plough No. 72., excited the admiration of the committee, by its easy holding, comparative light draft and good work, and obtained their recommendation as the best sod plough for deep ploughing, or heavy work, requiring a double team.

A true, "centre draft" plough is so constructed, that the central point of its line of draft, will balance on the central point of the line of resistance, and maintain its given depth and width of furrow in a free and clear soil, without assistance. If otherwise constructed, the line of draft is more or less oblique to the line of resistance, and requires the labor of a ploughman to counteract the oblique tendency, and consequently increases the labor of the team in proportion to the waywardness of the plough, and the counteracting struggles of the ploughman. This, was so manifest, during the examination and trial, that some of the committee were led to believe, that the vaunted office of the "wrestling ploughman," was nothing more or less than a necessity growing out of the imperfect construction of the plough; or in other words, the plough holder was needed mainly, to conceal the ignorance or mistakes of the plough maker.

This view so strongly impressed itself, that it was proposed to recommend to the society, to offer, at their next ploughing match, a list of premiums for the best samples of ploughing, performed by ploughs without a hand to turn or guide them, except putting in and taking out at the end of the furrows, or when thrown out by accident. Aside from its novelty, which may be attractive, it will exhibit the running quality of each plough, without concealment, and consequently call out the skill of the plough maker. A plough which, unaided, will keep its depth and width of furrow the most even and perfect, in a clear soil, will require the less aid in a rough soil, and its easy draft and easy holding, are scarcely less important in the latter than in the former.

A plough should not depend for its reputation upon the skill of the ploughman, as is many times the case; but it should

exhibit the intelligent skill of the manufacturer, if possible, to the extent of dispensing entirely with the aid of the ploughman, in giving a specimen of good ploughing; and there is much reason to hope, that through the action of this society in this matter, such implements will be produced, that our farmers will soon discard, as worse than useless, every plough that requires the labor of man to keep it from running out, or turning over, in a clear soil.

WILLIAM CLARK, *Chairman.*

EXPERIMENTS ON MANURES.

The following statements, in regard to the manufacture and application of compost manure, were presented at the late annual meeting of the society, and the executive committee have awarded to each a premium.

Christopher Wright's Statement.

My method of making compost manure, is as follows:—In the summer and fall of 1846, we carted seventy-five loads of loam and turf, and put under our sheds and in our yards, and spread three or four inches in depth. We then turned our hogs and cows upon it during the summer, every few days sowing corn upon the same. During the winter, we had a stock of cattle lying on it. In the spring, we took off the green manure for corn, and then put hogs upon what remained, with the same process as before. We also ploughed and turned it often, and mixed some horse and hog manure with it, and drew in the wash from the yard, which is naturally wet. During the summer of 1847, we put in about twenty-five loads more, with the same process, covering with stalks and straw, and had cattle upon the same. We took off the greater part in the spring of 1848, and carted loam from the distance of one mile, at an expense of thirty cents per load. In August, we cleaned the whole yard and sheds, taking the water also, carted it upon the mowing, and put it into large heaps, making in the whole, one hundred and thirty loads. We likewise, drew one hundred

hogsheads of liquid manure from the yard, by means of a box made for the purpose,—drawing it into a hole and dipping it up with a pail. In November, 1848, we spread it upon six acres of grass, and found it well pulverized and fine for use.

NORTHAMPTON, *January*, 1849.

Samuel Power's Statement.

In September, 1847, I collected from my swamp, and clearing of ditches, a mixture of peat and black or swamp mud. After carting it near where water could readily be procured, I made a large enclosure, by setting up posts, and placing within, boards, so that it might be kept compact, I first filled the enclosure about one foot, which took about fifteen loads of the mud. I then added about fifteen bushels of ashes, and as many pounds of saltpetre, or one pound to a load, together with a small portion of lime and plaster of Paris; the whole spread broadcast, and then thoroughly drenched with water; thus continuing one course upon another, until the pile was finished. Thus I used one hundred bushels of ashes, one hundred pounds of saltpetre, five hundred pounds plaster of Paris, and three bushels of lime, for the one hundred loads, at an expense of about thirty dollars, or thirty cents per load, for both materials and labor.

Now, the question will naturally arise, what is the real value of the article? This I propose to show, by the application of it, the past year, (1848,) believing one fact worth more than many doubtful speculations, on any subject. In the fall of 1847, I ploughed six acres of land, that had been mowed some three years, and produced a moderate crop of hay, having never been manured very highly. To four acres, on the best side, were put twenty loads of good manure to the acre, taken from the yard, last spring, and spread broadcast. Cultivated it in, and planted to corn. The two remaining acres, I served the same way; with an addition of five loads to the acre,—making in all, fifty loads on the two acres,—from the compost pile.

It was manifest to all who saw it, that the corn on the two

acres was decidedly the best, from the beginning to the end. The crop remained remarkably vigorous during the whole season, and when cut up, the stalk and husk were as green and fresh as at midsummer ; an indication that the land was in good condition. The corn was very sound ; I think, the best eared I ever raised. I planted three feet one way, and five the other, and yet the crop covered the ground completely, and was very heavily eared,

I spread a few loads on a poor spot of grass land, with equal results. It produced clover and English grass, where nothing grew before, of any value.

HADLEY, *January 8, 1849.*

Nathaniel Eager's Statement.

Last year, I submitted a statement in regard to the preparation of manure, for which I received a premium. My object now is, to state some improvements in the preparation, but more particularly, my process in the *application* of manure thus prepared. I have made reservoirs near my barn-yard, varying in depth from one and a half to four feet, and covering about one-fourth of an acre. Into these reservoirs, I cart about two hundred loads of muck, and about fifty loads of stable manure, mixing as well as may be, and ploughing through as often as once a week, when it is not too wet. In my barn-yard, I have concluded that it is much better to have less depth of muck than heretofore, on account of convenience. I have now not more than one foot in depth, and through the winter, I form ridges, or swells, all through the yard, to conduct the liquor off to my reservoirs, in order that none of it may be lost. I continue the same course as heretofore, under my barns, and can suggest no improvement there ; in fact, I could hardly hope for any, for the quantity and quality of manure made, are most excellent.

I have also two tenements on my farm, each having a stable of about eighteen feet square, in each of which are kept a cow and a hog. Into each of these stables, I cart about eight loads

of muck, and in the spring, I get from ten to twelve loads of very excellent manure, enough for an acre of corn. The quantity of my manure is very great, but I pride myself more upon its quality, as a top-dressing. I think it decidedly better than ordinary barn-yard manure for that purpose, and for this reason,—this muck manure does not dry. It may be applied in the dryest weather, and the first rain, afterwards, will start the grass; while with barn-yard manure, it is too much like making a platform over the roots, and spreading the manure on it. The muck can penetrate to the roots of the grass at all times, while the barn-yard manure remains in lumps, and evaporates, especially on dry ground. In the application of this manure, I have found it better for cold, moist lands, that were worn out, than for land previously tilled, in the proportion of three to one. Upon such land, I have found twelve or fifteen loads of muck manure to increase the weight of produce four-fold. I tried the experiment upon a piece of moist, spongy, cold land, of rather more than an acre in extent, where I did not get eight hundred pounds of hay to the acre. I used about twelve loads to the acre, and now get between two and three tons of good hay; and to get this yield, only requires top dressing once in three or four years, the land being so moist and spongy, as to retain all the fertilizing power of the muck manure.

WORTHINGTON, Dec. 30, 1848.

TURNING IN GREEN CROPS.

Nathaniel Eager's Statement.

This experiment has occupied several years. I have devoted no little time and attention to it, and, I am happy to say, with the most satisfactory results. I had about two and a half acres of meadow, which was entirely worn out, and when I seeded it down, the grass would not take. I commenced by spreading green stable manure over it, at the rate of about twelve loads to the acre, and ploughed it in, rolled it, furrowed it, and planted to corn, adding about eight loads of manure to the acre,

in the hill. I got a fair crop of corn, and the next year seeded it down to oats, with about eight pounds of clover seed to the acre. The crop of oats was fair. The following June, the clover being very thick, and about knee high, I turned it in very carefully, and sowed it to buckwheat, getting an excellent crop. I cut the buckwheat as high as possible ; and turned the stubble in ; then sowed to oats, four successive years, cradling the oats as high as possible, and immediately turning the stubble in ; and got an increased crop, every succeeding year. The manure, alone, would have run out in two or three years, but turning in the clover and the stubble every year, enriched the land, and increased the crop. This piece, having been seeded down, now bears very heavy grass, quite equal to three tons to the acre.

WORTHINGTON, Dec. 30, 1848.

RECLAIMED MEADOW.

Nathaniel Eager's Statement.

My farm comprises a good deal of low, moist land. I have a swale between two small hills, at the head, and in the middle of which were two cold springs, and some slough holes, that would not freeze in winter. Besides the uselessness of the land for cultivation, it could not be carted over at any season of the year. This swale is from four to eight rods wide, and about forty rods long. I cut a ditch lengthwise through the centre of it, of four feet depth. This I half filled with stones, covered with brakes, and then filled with dirt making a blind ditch. It now bears the very best English grass, quite three tons to the acre, having only been harrowed and sprinkled with herds grass and clover seed. The ground is dry, and hard enough to team over at any time. Some portions of it I have planted to oats, corn, and potatoes, and got good crops. The ditch of forty rods cost me five days' labor in September, at, say seventy-five cents per day. The filling with stone I considered no expense, as I was necessarily carting away stone

heaps from my upland, and could put them here with as little trouble as elsewhere. The covering took perhaps two or three days more,—the whole expense not exceeding six dollars, for reclaiming nearly $1\frac{1}{2}$ acres.

I have also an interval of fifty or sixty acres, near the centre of which, was a spot of about two acres, too wet to plough, and covered with little knolls,—probably where trees had been rooted out,—which made the mowing there very difficult. In fact, it was scarcely worth mowing, as there was no grass on the knolls. I ploughed off the knolls, and filled the hollows, covering the ground well with the dirt from the knolls, and yet carting off to the compost heap quite thirty loads, with which I mixed about six loads of stable manure, making a rich compost. I then covered this spot with compost manure, at the rate of fifteen loads to the acre. The second year it yielded a very bountiful crop of clover and herd's grass, at least six times more than before reclaiming. The expense attending this experiment, was about eight days' labor for the two acres, which was amply repaid by the thirty loads carted to the compost heap. I now get three tons to the acre from this heretofore useless spot.

WORTHINGTON, Dec. 30, 1848.

ON POULTRY.

Lyman Church's Statement.

As there appear to be doubts in the minds of many respecting the truth of the statement heretofore presented by me, in regard to the results of my experiment with poultry, I take the liberty of presenting another statement, which will also show what has been done, as well as what can be done, in regard to making the keeping of poultry profitable.

<i>Nov. 3, 1848.</i>	POULTRY YARD,	Dr.
To 111 hens, on hand, valued at	- -	\$27 25
40 Dorking pullets, at 50 cents,	- -	20 00
22 " cocks, " "	- -	11 00
10 ducks, at 20 cents,	- -	2 00
5 bushels carrots, at 20 cents,	- -	1 00
10 " small potatoes, 30 cents,	- -	3 00
37½ " corn, damaged,	- -	18 34
6 " buckwheat, at 60 cents,	- -	3 60
5½ " oats, - - -	- -	2 36
246 " wheat screenings,	- -	83 56
23 cwt. 18 lbs. corn meal,	- -	34 10
11 sheep, - - -	- -	1 85
34 chickens, at one shilling,	- -	5 68
3 fowls, cost, - - -	- -	3 50
		<hr/>
		\$217 24

<i>Oct. 3, 1849.</i>	POULTRY YARD,	Cr.
By 1402 dozen eggs, at 13½ cents per dozen,		\$189 27
28 fowls, sold for - - -	- -	24 66
71 bushels manure, at 15 cents, - -	- -	10 65
21 chickens, used in family, - -	- -	4 99
Poultry sold for 8 and 9 cents per lb. -	- -	17 82

Stock on hand.

60 Dorking pullets, valued at 50 cents,	-	30 00
12 " hens, " 50 " -	-	6 00
15 pullets, half blood, " 25 " -	-	3 75
105 hens, " 30 " -	-	31 50
35 Dorking cocks, " 50 " -	-	17 50
10 cocks, " 17 " -	-	1 70
3 fowls, - - - -	-	3 50
		<hr/>
		\$341 34
	Deduct	217 24
		<hr/>

Net profit, \$124 10

The average number of hens, kept throughout the year, was 140, fed principally on wheat screenings, corn meal and corn crack, of which I fed them as much as they would eat, both summer and winter; also keeping them well supplied with fresh water, old plastering, lime, ashes, gravel, &c., and fresh meat, in the shape of old sheep, during the winter. The average number of eggs layed by each hen, is 120. Number of eggs layed in each month through the year, is as follows: November, 47 dozen; December, 73; January, 84; February, 122; March, 184; April, 181; May, 177; June, 161; July, 157; August, 137; September, 77. Thus showing that my hens lay the year round, besides doing something towards supporting themselves.

MIDDLEFIELD.

Subsequently to the foregoing proceedings, the executive committee awarded a premium of \$10, to T. P. Huntington, of Hadley, for the best conducted experiment in reclaiming wet meadow, or swamp lands by draining or otherwise,—and a like premium to George Dickinson, of Hadley, for the best conducted experiment in the cultivation of wheat.

T. P. Huntington's Statement.

I present the result of two experiments made by me within five years past in the way of draining.

The first was made upon a piece of ground containing two acres, lying east of my house and west of a sandy hill. This lot is thirty rods long from north to south. Immediately at the foot of the hill there was, in 1845, a strip of ground, perhaps two rods in width, too wet for cultivation, and too soft to bear a team. This bog had upon each side of it a ditch. Two ditches running across the lot of two acres, (one about four rods from the north end and the other near the middle,) emptying into a main ditch near the west side, besides one at the south end, which passed into a lot adjoining, served as outlets.

In August, 1845, I sank the ditch nearest the hill deep

enough to cut off all the springs, conducting all the water through one ditch south. This operation rendered the other four ditches worse than useless. These were filled in the fall of the same year, by means of a good team, with cart wheels, and a plough attached to the off end of the axletree. In the spring of 1846, the bog was ploughed, though yet very miry, and the year following was planted with the rest of the field, producing apparently the heaviest corn, yielding at the rate of about fifty-five bushels per acre. In 1848, the whole was sown with barley and grass seed, and is now a beautiful spot of mowing, without a hillock, bank, or ditch, to hinder the free use of the scythe and horse rake.

The other experiment was made upon a piece of low ground, one rod wide and about ten long, (near the lot just mentioned) running cornerwise with the lot, commonly saturated with water, and covered with tough bogs. In the autumn of 1847, this hollow was backfurrowed, a ditch dug on one side deep enough to cut off the springs, and rails laid at the bottom covered with board, turf, and earth. This covered drain still operates finely, and the hollow is now dry, smooth and productive, having borne the last year corn, and this year oats and clover.

I am aware that these experiments are on a small scale, but still the principle would apply on larger tracts of land. Perhaps I should state that the outlay in these cases was trifling, as the labor was done with my own hands, (except the team work,) and at a leisure season.

NORTH HADLEY, Dec. 27, 1849.

George Dickinson's Statement.

I present the following account of a crop of wheat raised by me the past season.

Amount of land sown, 218 rods.

Amount of seed sown, $2\frac{1}{2}$ bushels.

Amount of crop, 39 bushels.

Rate per acre, 28 bushels, 20 quarts.

The land had been used as a mowing lot, altogether, for twenty-five or thirty years previous to the year 1846. Late in the fall of that year it was ploughed to the depth of ten or twelve inches. In 1847 it was planted with corn and potatoes without manure. In the spring of 1848, it was worked with a heavy cultivator and planted with corn and potatoes,—mostly the latter,—a little plaster being put in the hills with the potatoes. In the fall it was ploughed seven or eight inches deep, and sown with wheat the 16th of September, the seed having been well soaked in strong brine and rolled in soot and ashes. The growth of straw was very luxuriant, lodging in some portions so badly as to cause the crop to fail entirely in those parts. It was harvested between the 16th and 19th of July.

The whole amount of labor expended on the crop, from the ploughing of the field to the time the grain was ready for market, was \$21.

I think it proper to add, that in consequence of its being somewhat affected with rust, the crop was smaller than it otherwise would have been. I cut the greater part of the field very soon after the rust commenced, or when the berry of the wheat was just out of the milk, being thus advised by those who had raised wheat for many years. I however reserved a portion of the field and cut it some days later. Upon comparison, that last cut, was found greatly superior to the first, in every respect.

HADLEY, August 18, 1849.

HAMPDEN COUNTY AGRICULTURAL SOCIETY.

The sixth annual show and exhibition of this society, occurred on the third and fourth days of October last, at Springfield, and was considered, in some respects, very far superior to any previous exhibition of the society.

The exhibition of working oxen was very large, and of the highest order. Nearly two hundred pairs were on the ground, many of which were superior, in size and beauty, to any ever before offered for exhibition in the county. Eight pairs, owned by Frederick Fowler, of Westfield, showed that their owner understands not only the management of cattle, but also the desirable points and qualities in purchasing. A new feature in the exhibition of cattle was introduced, which created quite an interest. After the committee had performed their duties, the cattle were formed into a procession, and driven through the principal streets of the town, with a banner displayed from the team of each town. This exhibition was, perhaps, one of the *strongest* attractions of the day.

The display of vegetables was another prominent feature of the fair. Nothing that the climate and soil can produce, was wanting. The exhibition of potatoes was unusually large. The varieties known as Gen. Jackson, Gen. Taylor, and French Carter were very fine, and the specimens of the more common varieties were not to be surpassed. One lot of sweet potatoes, in perfection, attracted much attention; also, a lot of Hill's Early, planted in August, and full grown. The competitors for collection and variety of vegetables were Richard Bagg, Jr., Aaron Bagg, of West Springfield; Sylvanus Pendleton, and D. Fitzgerald, of Chicopee; whose collections were large, and varieties complete. Even our Suffolk neighbors would find it difficult to excel the vegetable kings of Hampden, in their efforts.

Other parts of the exhibition were in their usual variety and beauty, excepting fruits, which were scarce, as was expected.

The annual address, before the society, was delivered by W. C. Goldthwait, A. M., principal of the Westfield Academy.

ON FARMS.

The committee upon the management and improvement of farms, present the farm of Frederick Fowler, of Westfield, as entitled to the premium in their department. Several other farms were offered for the inspection of the committee, but this is the only one entered in time to comply with the regulations of the society, in the competition for premiums, and is the only one which has been examined by the committee.

Notwithstanding the absence of competitors, the committee did not consider themselves justified in recommending a premium, without a faithful examination of the farm. They have spent a day in going over the whole of it, observing the processes of cultivation and improvement, and making an estimate of time, value, and economy; and they present the following report of their observations.

Mr. Fowler's farm consists of about two hundred acres of land, under cultivation. It lies in separate parcels. About one-half is plain land, of light, sandy soil, of the usual character; the remainder lies in different parts of the interval of Westfield, and includes the varieties of its meadow land.

In the cultivation of the plain lands, which compose so large a part of this county, it too often happens, that those portions of the land which are the hardest of cultivation, and at the same time the richest, such as the margins of brooks, and the hollows frequently found on the surface, which contain the wash of the higher portions of the soil, are neglected and unimproved. This fault cannot be found with Mr. Fowler's lands. The committee went over a field of fifty acres of rye, every where well got in, evenly sprouted, and in first-rate order. The whole of it had been ploughed twice this season, and full one-half of it is of that kind, ordinarily not ploughed at all. The

bushes have been cut and ploughed up ; inequalities levelled ; many acres of new land cleared, and sowed for the first time ; and the whole brought into a state to be easily tilled in future, or, whenever a supply of water is to be had, to be turned into pasture.

In the meadow part of the farm, the committee first examined a field of twenty acres of corn. Until this spring, as far back as can be remembered, this had been divided into about one-third arable land, on which grew, nearly every year, a scanty crop of corn ; about one-third of hide-bound mowing, and the rest abandoned to brush, brier, and vine. This year, the whole field has been cleared, ploughed, and levelled, so as to be uniformly planted, and the average yield of corn cannot be less than thirty-five bushels to the acre. A mowing lot, of ten acres, three years ago was cut in two by an old passage way and balk, full two rods wide ; in the centre rose a gravelly knoll, which grass never attempted to cover ; in one corner was a swamp hole, whose only growth was flags and cat-tails ; and old fences ran through the lot in all directions. At the present time, the balk is entirely obliterated ; the interior fences are cleared away ; the knoll has been manured, by foddering upon it, so as to have produced, this season, two good crops of grass ; and the swamp is changed into meadow grass land.

The same proofs of well spent labor, are seen upon every part of the farm. Substantial fences have been built, wherever needed. Here, two or three acres have been reclaimed by draining, and made for the first time accessible to teams ; here, another lot has been gained from the alders, by the side of the brook, which had always possessed it. A field of ten acres, which had felt very much the want of manure, while in the hands of other persons, is now covered, after being manured two seasons, with a growth of corn which can rarely be equalled. The committee examined it carefully in many places, and using the methods commonly employed in computing the yield of corn, they could not arrive at an average of less than one hundred bushels per acre.

A still more interesting and uncommon spectacle, in New England farming, was that of thirty head of fat cattle, belong-

ing to the farm, a specimen of which is exhibited at the show here to-day. They were feeding in one pasture, and enjoying the rich herbage; but such huge hills of flesh looked capable of finishing many a field of corn, before the winter is over, if they have not found their way to market.

The labor of the farm has been performed, since the spring work, by one span of horses, two yoke of oxen, four hired men, the owner, and a boy of twelve years. A single cow has supplied all the milk and butter used by the family, throughout the season.

In view of the great improvements effected on this farm, within three years, and the amount of labor expended in preparing it for ultimate rather than immediate returns, the committee recommend an honorable premium, in order that others may be encouraged to pursue the same direction. They would enforce their conviction upon all, that permanent agricultural improvements are of an order of their own, and are not to be subjected to the ordinary rules of economy, which are properly applied to other applications of labor and capital. All other products will perish, sooner or later; the fashions and demands which now make them valuable, will change, and they will become valueless; but in return for agricultural investments, the fruits of the earth will always yield their increase, and they will always supply the unchangeable necessities of mankind. Their profits, unlike those of successful trade, are not a mere transfer of wealth from one possessor to another, which occasionally heaps up wealth in fortunate hands; but they are won from reluctant nature, and they remain, to their author, and those who shall come after him, forever,—a possession and benefit to the human race.

For the committee,

SAMUEL FOWLER.

SPRINGFIELD, *October 3, 1849.*

RECLAIMED SWAMPS—GRAIN AND ROOT CROPS.

The Directors of the Hampden County Agricultural Society, who have the above subjects in charge, take pleasure in calling

the attention of the public to the statements of valuable improvements made in swamp lands, and also, of superior crops raised within the county, the past season. The applications for premiums, though few in number, are deserving of particular notice.

R. S. Merrick's Statement.

The piece of reclaimed meadow to which I call the attention of the directors, consists of about eight acres. This was covered with an enormous growth of bogs,—some being from three to four feet high,—and some brush, mostly alders. In the fall of 1840, I opened a ditch through the middle of the meadow, or swamp, which took off the water, so that I was able, the succeeding fall, to commence cutting the bogs. The bogs were cut, and when sufficiently dry, burned on the ground; the ashes were spread, and harrowed in; herd's grass and red top seed was sown and bushed in, usually in September. The meadow was finished in 1848, and the whole mowed, the past season, which yielded an average of two tons of good hay per acre. I usually applied a light dressing of manure, the third year after seeding; the ashes being sufficient, for the first two years. This swamp was of little or no value, except as a burrow for muskrats, &c. The expense of reclaiming did not exceed thirty dollars per acre, twenty of which was for cutting the bogs.

WILBRAHAM, 1849.

William Burt's Statement.

The piece of reclaimed swamp to which I call the attention of the society, consists of about two acres, which was very wet and boggy, and previous to the fall of 1845, would not more than pay for mowing. In the fall of that year, the bogs were cut, and sand and earth, from the margin of the swamp, drawn upon it, to the depth of from two to twelve inches,—which was done with thirty days' work, by one man, and a pair of

horses. In the spring of 1846, I spread about seven cords of compost manure upon it, and sowed it with clover, herd's grass, and red top seeds. The following August, I mowed between two and three tons of good hay from it; and each year since, full two tons per acre, of the best horse hay.

LONGMEADOW, 1849.

Phineas Stedman's Statement.

The piece of wheat I offer for premium, was grown on two hundred and sixty rods of ground. The product was forty-five bushels of wheat, weighing sixty-one pounds per bushel, being at the rate of twenty-five bushels twelve quarts per acre. The land had lain in grass many years, until 1847, when it was ploughed and planted with corn; it was also planted with corn in 1848, with a dressing of compost manure, each year. The wheat was sown the last of September, at the rate of two bushels per acre.

I estimate the cost and value as follows:

COST.				
Ploughing land,	-	-	-	\$2 00
3½ bushels wheat, at \$1 50,	-	-	-	5 25
Sowing, harrowing, and rolling,	-	-	-	2 00
Harvesting,	-	-	-	5 00
Threshing, 45 bushels, at 10 cents,	-	-	-	4 50
				<hr/>
				\$18 75

VALUE.			
45 bushels wheat, at \$1 50,	-	\$67 50	
3 tons straw, 5 00,	-	15 00	\$82 50
			<hr/>
Net proceeds,			\$63 75

CHICOPEE, 1849.

John M. Merrick's Statement.

Quantity of ground, one acre, which had been planted three years in succession, and manured with seven cords of manure each year. The rye was sown the first week in September,—quantity 30 quarts. Product, 27 bushels, 31 quarts, and the ground tolerably well stocked for another crop.

WILBRAHAM, 1849.

Sardis Gillett's Statement.

The corn I offer for premium was raised on one acre of land which had lain in grass forty years or more. It was ploughed in October, 1848, and in May, 1849; about 20 loads of green stable manure were spread upon it and ploughed in. The land was furrowed three feet one way, and three and a half the other, and half a shovel full of earth, from under the barn, was put in each hill. Planted with twelve row corn.

The product was 235 bushels of ears of sound corn, and 15 bushels of ears of small corn. I shelled one basket of ears, and it yielded more than a bushel of shelled corn to two bushels of ears. I am satisfied that there were more than 120 bushels of corn on the acre.

SOUTHWICK, 1849.

Ephraim Fenton's Statement.

I herewith send a statement of corn, raised on two acres of ground the past season. The soil is of clay loam, and was green sward. It was manured with forty cart loads of stable manure to the acre; the hills were two by two and a half feet apart. Product, 315 bushels sound corn, and 15 bushels small corn. Two bushels of ears yielded 36 quarts of shelled corn, making 93 bushels per acre.

BRIMFIELD, 1849.

J. Howe Demond's Statement.

The land sown to turnips by me the past season, measures $1\frac{1}{2}$ acres. I took from it a crop of rye in July last; in August I ploughed it and put on $2\frac{1}{2}$ cords of stable manure. Part of the manure was ploughed in, and part harrowed in. It was sown on the 4th of August to turnip seed, in drills, 26 inches apart, and worked with the cultivator and hoe once. The product was 1200 bushels, weighing 48 pounds to the bushel, making twenty-eight tons and eighty pounds. The turnips where the manure was harrowed in, were much the best.

SPRINGFIELD, 1849.

APPLE ORCHARDS.

There have been but two entries for premiums on orchards the present year, and both made by Edmund Van Horn, of Chicopee. Both orchards are in excellent condition, and show for their owner a commendable spirit of enterprise and improvement, and promise ere long to warrant him an hundred fold, in rich and delicious fruits. For want of competition, and to induce further improvement, the Directors think best to pass by the larger orchard, (containing 270 trees,) and notice only the one containing 130 trees. One hundred of these were planted in the spring of 1843, the remaining thirty in 1844, and were of such size that seventy-five of them made an ordinary one horse waggon load. They are now from fourteen to eighteen inches in circumference, and of beautiful proportion. The ground remained in grass, until the spring of 1848, when it was ploughed, manured and cultivated. The same course was also pursued in 1849, and Mr. Van Horn states that the trees have improved much faster since the land has been in a state of cultivation, than while it remained in grass. A wash consisting of one part water and two parts soft soap, has been applied to the trees twice.

To show that this is not an unprofitable investment, the directors submit the following statement:

1½ acres occupied by the trees, at \$75 00 per acre,	\$112 50
130 apple trees, cost 25 cents each,	- - 32 50
Expense of procuring trees, setting out and applying wash,	- - - - - 10 00
	<hr/> \$155 00

Present value of 1½ acres of land,	\$112 50
130 trees, at \$5 00 each,	- 650 00—\$762 50

Leaving a net gain of - \$607 50

And this sum we have no doubt will be realized by the owner in a few years ; while the property will be still increasing in value. Let all farmers do likewise and they will reap the reward.

The directors award the following premiums :

To R. S. Merrick, reclaimed swamp, 1st premium,	\$6 00
Wm. Burt, " " 2d "	4 00
Phineas Stedman, wheat crop, 1st "	4 00
John M. Merrick, rye " 2d "	2 00
Sardis Gillett, corn " 1st "	4 00
Ephraim Fenton, corn " 2d "	2 00
J. Howe Demond, turnip " 1st "	3 00
Edmund Van Horn, apple orchard, 1st "	8 00

For the directors,

S. L. PARSONS, *Chairman.*

RECLAIMED WASTE LAND.

A premium of \$4 00 was awarded to Aaron Bagg, of West Springfield, for reclaiming waste or barren land.

Aaron Bagg's Statement.

The lot of land I offer for premium, contains one acre and seventy-four rods. The soil, mostly a fine sand, was so

poor that scarcely any thing grew upon it, except a few low blackberry vines. It was ploughed in the fall of 1846, and two hundred bushels of leached ashes, with twelve loads, of about thirty bushels per load, of rich soil from my wood yard and around my buildings, were spread upon it in the spring of 1847. Part of it was planted with white beans, and a part to muskmelons and watermelons,—the melons manured in the hill, with two forks full of manure. The beans yielded fifteen bushels, and the melons a fair crop. In the spring of 1848, stable manure was spread on it, and it was planted with melons, garden beans, radishes, and peas, and after the peas a crop of turnips. The melons were a light crop, the vines blighting. The beans were most of them sold for string beans, and the peas produced at the rate of about seventy-five bushels of pods per acre,—the turnips a large crop, very fair and smooth. Last spring, stable manure was again ploughed in, and it was planted with early white corn, garden beans, peas, crook neck summer squash, radishes and tomatoes, and turnips after peas. I am unable to state the yield of these crops, as they have been gathered daily in their season, and sent to market, but am well satisfied with the result of my experiment on waste land.

WEST SPRINGFIELD, *Oct. 2, 1849.*

ON SHEEP.

The raising of sheep in this county has diminished to such an extent, that it would seem an easy matter to prepare a report upon the subject. The united efforts of all interested in the growing of wool, and of the lovers of lamb and mutton, are required to obviate the causes of this constantly increasing diminution. Ask the farmer why his flocks no longer whiten his fields, and he will tell you he is as much inclined to keep sheep now as formerly; but they will not thrive, and like Pharaoh's lean kine, will not please him by their growing fatness. The dogs are at the root of the matter; they so worry and tease his sheep, that the butcher will hardly look at them: so he has given up the raising of sheep as a bad business. Ask

another farmer if he can afford to grow wool at the present prices, and he replies he can,—if the increase of his flocks were not prevented by the dogs. If these offenders do not kill them outright, they lame and mangle them so that their scanty skeletons will not survive the winter. Ask the butcher to purchase the best of your flock, and he throws in your teeth their poverty-stricken carcasses, and the farmer can only reply again, “the dogs! the dogs!” It is next to impossible to keep sheep in his pastures, they are in such constant fear of their canine enemies, and he has found that sheep will not fatten when they live in constant alarm.

A nervous sheep, if we may so call it, is never a thriving one. Ask the buyers and consumers of lamb and mutton for their ideas on the subject,—they cannot afford to pay such prices for it as eight, nine and ten cents a pound, for the same which they formerly paid three, four or five cents. So that they have come to the reasonable conclusion, that the increased price is an unreasonable dog tax, of three to four cents per pound. Look back a few years, and as you passed through the county, and observed the farms, almost every farmer had his 10, 20, 40, 50 or 100 sheep, all quietly feeding in his pastures. Then we had good mutton and fat lambs, and cheap enough. Now travel around the county, and what do you see? *More dogs than sheep*,—as might be proved by a census. The committee are of the opinion, that all the breeds of sheep now amongst us, can only be raised profitably, when the people of this county are satisfied that they have paid an indirect tax on their dogs long enough, and not till then.

DAVID MOSELY, *Chairman*.

MILCH Cows.

There was awarded for milch cows, under six years old.

To Horace Putnam, Springfield, 1st premium,	-	\$4 00
James Chapin, “ 2d “	-	3 00

Horace Putnam's Statement.

My cow is of the native breed, and five years old. She has had common pasture. Her milk from June 10th to 20th, weighed 447 lbs.; from September 10th to 20th, 296 lbs. The milk was principally sold. From her milk in one day, June 18th, was made one and three-quarter pounds of butter.

SPRINGFIELD.

James Chapin's Statement.

The cow I present for premium is of native breed, and three years old. She calved June 20th,—calf slaughtered when five weeks old, the quarters weighing 130 lbs. Milk from September 10th to 20th, 270 lbs,—average of butter, 7 lbs. per week. Her pasture was of the common description.

SPRINGFIELD.

BERKSHIRE AGRICULTURAL SOCIETY.

THE Berkshire Agricultural Society, held its thirty-ninth anniversary, on Wednesday and Thursday, the 3d and 4th of October last. The weather was not propitious; but the members and patrons of our society have enjoyed her anniversaries so long, in good weather, that they are determined that the old fashioned jubilee shall come off, rain or shine. The competition for the premiums of the society, seems to have been this year more brisk than ever. Every year brings additional proof of the great value of this institution, to the agriculture and mechanic arts in the county. Thirty-three ploughmen entered the lists for the prizes, and the weather on Thursday morning put their courage to a severe test. It rained steadily and very fast, yet twenty-six ploughmen appeared on the ground, ready for the contest; and the good temper and ease, with which the competitors performed their work, under such unfavorable circumstances, was admirable.

The address was delivered by George S. Willis, Esq., the president of the society.

ON AGRICULTURAL PRODUCTS.

This county has been favored with a long, warm season, and seasonable showers, while other parts of our country have suffered from droughts rarely experienced. The committee would congratulate their fellow citizens upon the bountiful harvest of the fruits of the earth as the reward of their industry. Not only is the husbandman blest with an abundant supply, but all classes cease to complain.

The agriculture of Berkshire is rapidly advancing, keeping full pace with, if not in advance of the best agricultural dis-

tricts in our country ; showing most conclusively that the spirit of enquiry is abroad among our farmers, and carrying them on to wealth. Much has been done in the way of improvement, yet it is undeniably true that much more remains to be done. It would be unnecessary to particularize deficiencies ; the committee rely more on the means of information, within the reach of every farmer, by the reading of agricultural journals, and the opportunity afforded at the end of each agricultural season by such gatherings, as we witness to day of our most intelligent farmers, and by an interchange of opinions and accounts of experiments made during the year. The committee fully believe that the agriculture of this county has received great benefit from the efforts of this society, which is the oldest in our country, and they would say to every farmer, old and young, give it your cordial support.

The committee viewed 173 crops entered for premium, most of which displayed good husbandry in their cultivation. Winter rye was large, long heads, and well filled. Corn was abundant, and there were a great many competitors for the prizes. The committee (among other premiums,) awarded

To Orin Curtis, of Great Barrington, for the best acre of winter wheat, - - - - - \$6 00

To Edward F. Ensign, of Sheffield, for 2d best do. 4 00

Thirteen pieces of spring wheat were entered for premium, all good.

To Charles Hinckley, of Lee, for the best acre of spring wheat, - - - - - 6 00

To Loomis Millard, of Egremont, 2d best do. do. 5 00

John Partridge, of Pittsfield, best acre winter rye, 6 00

Amaziah Gaines, of Stockbridge, 2d best do. do. 5 00

There were about forty pieces of corn, entered for only six prizes, and piece after piece measuring more than seven pecks to the square rod, and some pieces nearly eight.

To Joshua S. Tillotson, of Lanesborough, for the best acre of corn, - - - - - 6 00

To Morgan Lewis, of West Stockbridge, 2d best do. 5 00

Leonard Tuttle, of Sheffield, for the best acre of oats, 5 00

To Levi Bradford, of Lanesborough, 2d best acre of oats, \$4 00

Edson Sexton, of Stockbridge, for the best acre of
meslins, - - - - - 4 00

To Reed Mills, of Williamstown, 2d best do. 3 00

The meslins entered by Mr. Mills, were barley and
flax, mixed, which was new to the committee.

To Nathaniel C. Waterman, of Williamstown, for the
best acre of barley, - - - - - 5 00

To Rufus Branch, of Richmond, 2d best do. - 4 00

Albion P. Bagg, of Lanesborough, for the best
acre of potatoes,—chenangoes, 632 bushels, - 6 00

To Henry Colt, of Pittsfield, 2d best, Carters, 480 do. 5 00

Seymour Coman, of Pittsfield, 3d best, long Johns
600 bushels, - - - - - 4 00

The potato yield is the largest we have witnessed
for many years, and, when viewed by us, generally in
a healthy state. We found some rot in southern Berk-
shire, but none north until we reached Pittsfield.

To Samuel Goodrich, of Stockbridge, for the best
young orchard, 54 trees, - - - - - 12 00

To George S. Willis, of Pittsfield, 2d best, - 10 00

John L. Cooper, of Sheffield, for 14 acres of fine peas, 2 00

CALEB BROWN, *Chairman.*

WORKING OXEN AND STEERS.

The exhibition of working oxen and steers, was highly cred-
itable. It is a fact, full of interest, that the improvements in
the form, size, flesh and management of the team, have kept
pace with those in the plough. At the first ploughing match
in Berkshire, there were four competitors, and three wooden
ploughs. Knowing that it required much power to speed the
“old Simsbury,” the committee are of the opinion that the
oxen that lived and labored in those days, might with propriety
be called working oxen, and that no farmer was then guilty of
the often alleged fault of having his working oxen too fat.
Who to-day could have witnessed the work of a wooden

plough, drawn by a team goaded to action, without sympathizing with the team, and experiencing returning symptoms of those aches, consequent upon an encounter with it thirty years ago? Who to-day holds his boyish notions so sacred as to believe that the ox, in order to a successful performance of labor, must show himself bony by the exhibition of a mere frame, covered with a hide, manufactured from too scant a pattern?

Who, to-day, can reflect upon the improvements, not only in the plough, but in the harrow and the cart, the method of cultivation, the grains and grasses cultivated, and the successful crossing in breeding, without being forced to the conclusion, that flesh on working oxen is not all practical deception, but the natural results of improved husbandry. The committee would recommend to rival competitors, to cease their fault findings, and go unitedly on in their laudable enterprise, receiving stimulus from the consideration, that flesh gives weight and power to the ox,—that flesh is valuable and always transferable.

There were entered for premiums, 14 yokes of working oxen, and 11 yokes of four year old oxen. The committee were instructed to test the working qualities of the oxen by the use of a stone boat, and it was evident from the crowd that gathered around the teams, to the exclusion of the committee, that it was an interesting exhibition.

GEORGE O. PECK, *Chairman.*

COWS AND HEIFERS.

The number of entries in this division, was forty-four. The milch cows surpassed any that the committee recollect ever having seen on the ground. The breeding cows, with their calves, gave great promise that we should not want for good stock to grace our shows hereafter. The committee would in a special manner notice a two year old heifer, belonging to Thaddeus Clapp, of Pittsfield, having had a calf in July last. For two months she gave thirty-eight pounds of milk per day, and for the two weeks just past has made nine pounds of butter per week, of the best quality.

S. L. RUSSELL, *Chairman.*

SHEEP.

The number of fine wooled sheep was, perhaps, less than has been presented on some former occasions, yet it was sufficient to indicate that our growers of fine wool are not wholly disheartened, in the competition with the farmers of the west, in which they have been called, within a few years past, to engage. We commend them for their courage, yet the prospect for a final triumph we believe to be in favor of the western grower. Still, we have much to encourage us. The demand for wool is yearly increasing, and as success is sure to attend all well directed efforts for the improvement of our sheep, in size, form, and weight of fleece, while the fineness, if not wholly retained, may not be much impaired, we think there is sufficient inducement for us to go forward. If we cannot succeed in the improvement of our flocks, so as to realize from them, annually, an income of five pounds per head, of fine, well washed wool, as a celebrated grower in Vermont has done, we may, perhaps, never be numbered among the vanquished in this competition.

MORGAN LEWIS, *Chairman.*

FRUITS AND VEGETABLES.

The specimens and different varieties of fruit, especially of winter fruit, presented at the fair, indicate that much more is doing in this department than formerly, not only by the farmers, but by all classes of our citizens. Still, there is ample room for further improvement. Let our farmers set themselves diligently to work, and in a few years our markets would be plentifully supplied with wholesome fruit. The climate of Berkshire is favorable to the growth and production of all the standard varieties.

The garden vegetables were of an excellent quality, and large growth, particularly the varieties of potatoes, which were exhibited by Stephen Reed, of Pittsfield, editor of the *Berkshire Culturist*. For these, the committee feel bound to pre-

sent a premium of three dollars ; they were a sample, well worthy of the imitation of the farmers of the county.

REED MILLS, *Chairman.*

Stephen Reed's Statement.

These potatoes, of which there were ten varieties, were raised by us, on the Dwight place farm, in Richmond. They consisted of the Eastport, a choice and very early variety from Maine ; Ward's Early Blue, very early ; an Early Blue, brought by us from Connecticut,—a fine table potato, at all seasons ; the Kidney, nearly as early as the last named variety ; the round Pink-eye ; the Lady Finger,—bakes easily, and is almost delicate enough to honor a lady's ring ; the Peach Blow, a bushel of which,—as the several last seasons have been,—can be raised at less expense than any variety we have tried ; the Carter, choice, as all know, for the table, but uncertain as a crop ; the Long Red, an old variety, which would pay most amply for a re-introduction of seed from a distance ; and the Greylock, a rare variety, originated by Hon. A. Foote, of Williamstown, and believed to be a cross of the Carter and Mercer.

PITTSFIELD, 1849.

AGRICULTURAL IMPLEMENTS.

The committee regard every improvement in the implements of husbandry, as a benefit conferred upon the world ; and while they would be slow to adopt every change in farming tools, as a gain upon old methods of agriculture, they still believe, that much of the superiority of the homestead, at the present day, is owing to the application of science and thought to the improvement in farming implements.

For valuable improvements in the numerous implements presented, the committee award

To Stephen Reed, of Pittsfield, . . . \$10 00

To Charles Hinckley, of Lee, for ploughs of the Star-buck model,	\$2 00
To Robert Pomeroy, for mail-axles,	5 00

Mr. Pomeroy exhibited several sets of mail-axles, of his own invention and manufacture, as especially adapted to use upon farm carts and wagons. The great saving in friction, which this axle possesses over others, commends them to the attention of all those farmers, who, while they believe that "money makes the mare go," believe also, that a lightened load makes her go, too. Appropriate to this, showing the adaptation of this mail-axle to farm uses, upon all descriptions of lumber and draught wagons, the committee are informed by a member of the society of Shakers, of New Lebanon, John Dean, that he has just returned from a journey of seven hundred miles, occupying six weeks' time, upon a set of these axles, without their once requiring oiling, from the time of starting; and that, upon examination, he thinks they would run three hundred miles more, without renewing the oil.

GEORGE W. MEAD, *Chairman.*

PLOUGHING MATCH.

The plough is a very ancient implement. It is written in the English language, p-l-o-u-g-h, and by the association of free and independent spellers, p-l-o-w. It may be remarked, that the same gentlemen can, by a similar process, turn their coughs into cows, which would be the cheapest mode of raising live stock; but it is to be feared, that they (referring to the cows,) would prove but low bred animals. Some have derived the English word plough, from the Greek *ploutos*; the wealth that comes from the former, suggesting its relation to the latter. But such resemblances between different languages, may be carried too far,—as, for example, if a man should trace the name of Alatomaha to the circumstance, that the first settlers were all tomahawked, on the margin of that river.

Time and experience have sanctioned the custom of putting only plain, practical men upon this committee. Were it not so,

the most awkward blunders would be constantly occurring. The inhabitants of our cities, for instance, who frequently visit the country during the fine season, would find themselves quite at a loss, if an overstrained politeness should place them in this position. Imagine a trader, or a professional man, from the capital of the State, unexpectedly called upon to act in rural matters. Ploughshares are, to him, shares that pay no dividends. A coulter, he supposes, has something to do with horses. His notions of stock were obtained in Faneuil Hall market, where the cattle look funnily enough, compared with the living originals. He knows, it is true, that there is a difference in cattle, and would tell you that he prefers the sirloin breed to all others. His children are equally unenlightened. They know no more of the poultry-yard, than what they have learned by having the chicken pox, and playing on a Turkey carpet. Their small amount of knowledge of wool-growing, is lam(b)entable enough.

The history of one of these summer visitors, shows that his rural education must be very imperfect. He no sooner establishes himself, than he commences a series of experiments. He tries to drain a marsh, but only succeeds in draining his own pockets. He offers to pay for having a compost heap carted off, but is informed that it consists of corn and potatoes, in an unfinished state. He sows abundantly, but reaps little or nothing, except with the implements he uses in shaving,—a process which is frequently performed for him by other people, though he pays no barber's bill. He builds a wire fence, and paints it green, so that nobody can see it. But he forgets to order a pair of spectacles apiece for his cows, who, taking offence at something else, take his fence in addition, and make an invisible one of it, sure enough, in no time. And finally, having bought a machine to chop fodder, which chops off a good slice of his dividends, and two or three children's fingers, he concludes, that instead of cutting feed, he will cut farming, and so sells out to one of those plain, practical farmers, whose pockets are not so full when he starts, but have fewer holes, and not so many fingers in them.

It must have been one of these practical men, whose love of

his pursuits led him to send in to the committee, the following lines, which, it is hoped, will be accepted, as a grateful tribute to the noble art, whose successful champions are now to be named and rewarded.

Clear the brown path, to meet his coulter's gleam !
Lo ! on he comes, behind his smoking team,
With toil's bright dew-drops on his sun-burnt brow,
The lord of earth, the hero of the plough !

First in the field before the reddening sun,
Last in the shadows when the day is done,
Line after line, along the bursting sod,
Marks the broad acres where his feet have trod ;
Still, where he treads the stubborn clods divide,
The smooth, fresh furrow opens deep and wide ;
Matted and dense the tangled turf upheaves,
Mellow and dark the ridgy cornfield cleaves ;
Up the steep hill-side, where the laboring train
Slants the long track that scores the level plain ;
Through the moist valley, clogged with oozing clay,
The patient convoy breaks its destined way ;
At every turn the loosening chains resound,
The swinging ploughshare circles glistening round,
Till the wide field one billowy waste appears,
And wearied hands unbind the panting steers.

These are the hands whose sturdy labor brings
The peasant's food, the golden pomp of kings ;
This is the page, whose letters shall be seen
Changed by the sun to words of living green ;
This is the scholar, whose immortal pen
Spells the first lesson hunger taught to men ;
These are the lines, O, heaven-commanded toil,
That fill thy deed,—the charter of the soil !

O, gracious mother, whose benignant breast
Wakes us to life, and lulls us all to rest,
How thy sweet features, kind to every clime,
Mock with their smile the wrinkled front of time !
We stain thy flowers,—they blossom o'er the dead ;
We rend thy bosom, and it gives us bread ;
O'er the red field that trampling strife has torn,
Waves the green plumage of thy tasselled corn ;
Our maddening conflicts scar thy fairest plain,
Still thy soft answer is the growing grain.

Yet, O, our mother, while uncounted charms
Round the fresh clasp of thine embracing arms,
Let not our virtues in thy love decay,
And thy fond weakness waste our strength away.

No! by these hills, whose banners now displayed,
In blazing cohorts autumn has arrayed ;
By yon twin crest, amid the sinking sphere
Last to dissolve, and first to reappear ;
By these fair plains, the mountain circle screens,
And feeds in silence from its dark ravines ;
True to their home, these faithful arms shall toil
To crown with peace their own untainted soil ;
And, true to God, to freedom, to mankind,
If her chained bandogs faction shall unbind,
These stately forms, that bending even now,
Bowed their strong manhood to the humble plough,
Shall rise erect, the guardians of the land,
The same stern iron in the same right hand,
Till Graylock thunders to the parting sun,
The sword has rescued what the ploughshare won !

O. W. HOLMES, *Chairman.*

HOUSATONIC AGRICULTURAL SOCIETY.

This society has had an existence nine years. It originated in the fact; that Berkshire County, one of the richest of the agricultural counties of the State, is divided in two parts, by a range of hills running across it, separating the meadows of the Hoosic from the meadows of the Housatonic; and the old county society, which holds its annual fairs at Pittsfield, could not afford those facilities and advantages, to the farmers of southern Berkshire, both necessary and desirable. A voluntary society was formed, and for seven years, it struggled against difficulties and obstacles entirely unforeseen, at the time it was organized. Many of its members were also members and contributors to the funds of the county society, and it became a serious tax upon the ardent and persevering authors of the Housatonic society, to sustain it. Finally, in the year 1848, this society was incorporated by the Legislature, and at the session of 1849, was endowed with all the benefits and privileges of other agricultural societies; and in November last, received the bounty provided by the State.

This society promises great usefulness to this part of the Commonwealth. The bounty will be expended to the best profit of our citizens; it will fall upon us like the gentle summer rains, to refresh and bless.

The eighth annual cattle show and fair of the Housatonic Agricultural Society,—being the first under the new act of incorporation,—took place at Great Barrington, on Wednesday and Thursday, the 26th and 27th days of September last. The weather on both days was favorable, and the town was crowded with people. Never was witnessed a more agreeable farmer's holiday.

The address was delivered by Ensign H. Kellogg, Esq., of Pittsfield.

ON AGRICULTURAL PRODUCTIONS.

All will agree, that the basis of improvement in agriculture lies in a more thorough tillage. One great hindrance to this, is the strong and universal tendency, among farmers, to own and cultivate,—or pretend to cultivate,—too much land. To the point which the committee have in view, is the apologue of the vine-dresser, who had a vineyard, and two daughters. When his oldest daughter was married, he gave her a third part of his vineyard, for a marriage portion. Notwithstanding this, he had the same quantity of fruit as before. When the other daughter was married, he gave her half of what remained; still, the produce of his vineyard was undiminished. The secret was simply this, that the more thorough tillage he was enabled to give the remaining third part, tripled his produce, while, at the same time, it reduced the cost of cultivation. We would not be understood to say, that no man can profitably manage a large farm. All rules have their exceptions. But we do say, that there are very few General Taylors in agriculture,—that the great body of us are fit only to serve in the ranks. Still, we may pride ourselves, as a society, both in review of the past, and in prospect of the future. The growing interest manifested in our exhibitions; the multitudes who attend them, and retire, praising our efforts; the greatly increased number of competitors, and of towns thus represented,—give us a pledge, that this institution will be sustained by the people, in its work of agricultural improvement and reformation, and not suffered to languish, till a more perfect and general cultivation shall supersede its necessity. And hence, our work, in the cause of an improved cultivation, should not be restricted to the interest, convenience, or supply, of a single generation, but be governed by the fact, that men, no less than crops, exist in succession, and that every man, in passing, ought to employ the powers given him, in preparing the way for the comfort and prosperity of successors.

The number of entries for premiums, was ninety-six, in seven towns in southern Berkshire. Of winter wheat, there were five entries,—the crops very good. We award

To Orrin Curtis, of Sheffield, the 1st premium,	.	\$5 00
To E. F. Ensign, of do. 2d do.	.	4 00

The piece of Jerome Hollenbeck, of Egremont, would have classed with the first, had it not been grown on new land. We think it is not the intention of the society, to offer premiums for crops on such lands. His piece was so good and clean, however, that we recommend, a reserved premium, be awarded him, of \$2 00.

Of spring wheat, there were four entries.

For the best two acres, to Peter Millard, of Egremont,	\$4 00
For the second best do., to James Parks, of Sheffield,	3 00

There were fifteen pieces of winter rye entered, of which several were of astonishing growth and great profit.

For the best two acres, to Gordon Race, of Egremont,	\$5 00
For the second best do., to Thompson Seely, of Great Barrington,	4 00

The number of entries on oats was twenty. This crop was injured by the drought; in some fields, almost ruined,—in others partially so. Notwithstanding, we found, in some fields, a heavy growth, on soils not affected by the dry weather.

For the best two acres, to Gilbert Munson, of Great Barrington,	\$5 00
For the second best do., to Benjamin Baldwin, of Egremont,	4 00
For the best acre of barley, to J. R. Lawton, of Great Barrington,	4 00
For the second best do., to Joseph Cline, of Egremont,	3 00

There were twenty-four pieces of corn entered for premium. The pieces viewed by us, varied from twenty-five to thirty-six hills to the square rod. The most suitable number, in the

opinion of the committee, is about thirty hills. The proper medium, however, can be found only by experiment.

For the best two acres, to Russell Kilborn, of Great Barrington, \$6 00

His piece contained five acres, giving one hundred and seventy-two bushels of ears to the acre; variety, eight-rowed.

For the second best two acres, to Morgan Lewis, of West Stockbridge, 5 00

One hundred and sixty bushels of ears to the acre; variety, eight-rowed.

For the third best, to Robert E. Galpin, of Stockbridge, 4 00

One hundred and forty bushels to the acre; eight-rowed variety.

Edmond Joyner, of Egremont, had the neatest and best cultivated crop of corn, that fell under our inspection; and if we could have been satisfied as to the requisite quantity of land, he would have been entitled to the first prize. We recommend to be awarded to him, a reserved premium of \$3 00.

Ten pieces of potatoes were offered. This crop has again been visited by disease. Some pieces, that we viewed, were materially injured; others not at all. We think the disease is not as prevalent, as in former years.

For the best acre, yielding three hundred and fifty-two bushels, to Edson Saxton, of Stockbridge, \$5 00

For the second best, to Dwight K. Savage of Sheffield, 4 00

For the best garden, to David Ives, of Great Barrington, 4 00

For the second best do., to Loomis Austin, of Egremont, 3 00

The committee viewed the garden of Rev. Samuel Howe, of Monterey, though not entered for premium, and were much gratified with the system and order with which it was arranged, the productiveness of every vegetable, and the ingenuity with which every corner and foot of land was occupied. The attention of the committee was also called to a piece of onions, four rods square, cultivated by Mrs. Crippen, of Sheffield, which

yielded seventy bushels, or at the rate of seven hundred and sixty-six bushels per acre. She sent sixty-five bushels to the New York market, for which she received fifty cents per bushel.

ELIAS WRIGHT, *Chairman.*

WORKING OXEN.

The chairman, as the organ of the committee, presents a few suggestions on the interesting subject, which forms the basis of this report. And first, farmers should be careful in the selection of their breeds, as a combination of good qualities in the ox, is necessary, to insure the owner a profitable return for his feed and care bestowed upon him. We need in the ox, the sprightliness and activity of the Devon, combined with the size, strength, just proportions, and proneness to lay on flesh of the finest quality, which we find in the well selected Durham. This done, we should always bestow feed sufficient to enable him with vigor, to perform the labor required, and to keep him in such condition as to flesh, that we shall be able, after affording him a short suspension from labor, and with the bestowment of a little extra feed, to fit him for the shambles. In this last particular, I think the most of farmers fail. It is the too general opinion, that fleshy oxen cannot labor. Hence, the objection so often urged, that the oxen presented for premiums, are too fat to be properly called working oxen. I am no advocate for bestowing premiums on oxen as workers, that have lain at their ease during the whole summer; neither should the fact of their being fat, prevent them from having a premium. The question should be—have they performed a good summer's work? If this can be answered in the affirmative, and in other respects, they are entitled to the reward. I say, give it, though they are fat, and much credit to the owner in addition.

MORGAN LEWIS, *Chairman.*

MILCH COWS AND HEIFERS.

The committee were gratified to see a larger competition than has ever been witnessed before, since the society has been organized ; and it would have been more gratifying, had there been certificates in writing, of the pounds of milk given by each cow, and the quantity of butter made through the months of June, July, August, and a part of September, as it would have relieved the committee of the difficulty in judging, under the unfavorable circumstances of some of the cows, entered for premium, being not as well milked as they should have been, on the morning before the exhibition. The committee, therefore, recommend, that cows offered for the society's premiums, should be accompanied by a written statement of what they have produced, the age, the breed—whether native or imported—the weight in common flesh, and the keep they have had, during the time of testing their qualities.

Every owner, indeed, of a cow or cows, should know for a certainty, what each cow produces a day, or a week. A striking illustration of the importance of this, is given by Mr. Malcolm, in his *Compendium of Modern Husbandry*. He kept an Alderney and a Suffolk cow, the latter, the best he ever saw. During seven years, the milk and butter being kept separate, it was found, year after year, that the value of the Alderney exceeded that of the Suffolk, though the latter gave more than double the quantity of milk at a milking, than the former. Thus, it will be seen, that a committee, though ever so competent, judging wholly from the external appearance of milch cows, decides, and must decide, many times, very incorrectly.

Fourteen cows, four two year old heifers, in milk, and ten heifers, not in milk, were offered for premiums.

J. R. LAWTON, *Chairman*.

PLOUGHING.

The time allowed for ploughing one-fourth of an acre, including a rest of ten minutes, was one hour, and the committee,

in awarding the premiums, have had more reference to the quality of the work, that to the time in doing it, if done within the time limited—though both have had their influence. The furrow was to be *three* inches deep and *eleven* inches wide. There were fifteen horse teams and six ox teams. On horse teams, the committee award

1st premium, \$8, to Edward Saxton, Stockbridge, ploughed in $57\frac{1}{2}$ minutes, including 10 minutes rest.

2d premium, \$7, to J. R. Lawton, Jr., Great Barrington, ploughed in 54 minutes, including 10 minutes rest.

3d premium, \$6, to Nelson Joyner, Egremont, ploughed in 57 minutes, including 10 minutes rest.

4th premium, \$5, to H. N. Tuttle, Sheffield, ploughed in 52 minutes, including 10 minutes rest.

5th premium, \$4, to J. M. Montgomery, Great Barrington, ploughed in 52 minutes, including 10 minutes rest.

6th premium, \$3, to E. N. Hubbard, Great Barrington, ploughed in 54 minutes, including 10 minutes rest.

J. Z. GOODRICH, *Chairman.*

NORFOLK AGRICULTURAL SOCIETY.

THE Norfolk Agricultural Society was incorporated by an act approved March 27th, 1849. In submitting the returns of its doings, the President and Secretary, (Hon. Marshall P. Wilder and Hon. Edward L. Keyes,) desire to call attention to one or two facts, which should be considered in estimating the relative credit due to the society, for the complete or partial success of its efforts in the first year of its existence.

The society was instituted under favorable auspices, and early attracted the attention and secured the aid and coöperation of the most public spirited and eminent citizens of the county. The farmers, generally, approved of its establishment and plans, and above five hundred memberships, obtained within a brief period and with little exertion, attest the general favor.

The officers and trustees of the Norfolk society might, also, gratefully acknowledge the information and benefit derived from the efforts and experience of the Massachusetts Society for the promotion of agriculture, and of the various county societies, which, together, for more than half a century, have been contributing to the comfort and happiness of the citizens, and to the welfare and prosperity of the State. Aided and encouraged by these favorable circumstances, the society was still embarrassed by one disadvantage, which neither knowledge, experience, nor effort could overcome. The products of agriculture are not matured in a moment. The seed must be planted before the harvest can be gathered, and time and due notice are especially required for those experiments and processes, by means of which agricultural knowledge is to be promoted and extended for the general good. The secretary of the Commonwealth, in his advertisement to the abstract of the transactions of the several societies for the year 1847, has declared that "what is more especially needed, is a copious and

minute detail of the experience of farmers in the raising of crops, and in the general management of their farms." These details, it is understood, are intended to comprise a statement of the nature and characteristics of the soils, the quantity and description of manures, the time of seeding, the methods of cultivation, the amount and value of labor expended, and the amount and value of the crops secured. It is obvious that a faithful and exact record of these details is essential in any report upon the culture of the soil, designed to benefit the farmer, or to improve our knowledge of agricultural science. It is also equally obvious, that it is impossible to provide them in cases where time is not given for maturing and adopting plans in advance of seed time. In a still greater degree is time required for experiments in draining and subsoiling; in reclaiming swamp, meadow and pasture lands; in improving the breed of cattle and swine; in the soiling of cattle; in the cultivation of seedling varieties of fruits, vegetables, &c.; in the raising of root crops, and in the planting and management of nurseries. Time is also required for infusing into the public mind that spirit which is necessary to induce men to become actors in new enterprises designed to promote objects not merely personal, but such as are intimately connected with the general welfare.

A preliminary meeting of the friends of agriculture was held at Dedham, on the 7th of February last, at which it was agreed to form a society. The first meeting of the society was held on the 28th of March. At this meeting, officers for the year were chosen, and a list of premiums was agreed upon.

Considerable time was employed in preparing the list of premiums for publication, and, especially, in placing it before the farmers of the county. The seed time had passed before many of them became acquainted with those details, which were essential to enable them to compete successfully for the prizes of the society.

Against these natural and inevitable obstacles the trustees arrayed the strong forces of energy and will; with what success the public will judge.

The annual exhibition took place at Dedham, on Wednesday, September 26th. The day itself was every thing that could

have been desired. Ten thousand of the yeomanry and mechanics of Norfolk county, accompanied by their wives and daughters, came forth to celebrate the new festival established in honor of agriculture; and the same sun which ripens the harvest shed its bright beams over all. The occasion was honored by the presence of numerous guests, distinguished for their ability and eminence, and for their devotion to agriculture.

The **PLOUGHING MATCH** demanded the earliest attention, and the scene presented a most animating spectacle. It was enclosed by a vast concourse of spectators, who beheld "the peaceful strife of husbandry," as the Roman populace did their gladiatorial combats from the seats of the amphitheatre; but with emotions as widely different as the spaces of time and distance which separated them. Seventeen competitors offered some proof of the interest taken in this important part of the exhibition.

The exhibitions of stock and domestic manufactures were deemed creditable, and afford an earnest of what may be expected in future. The display of fruits and flowers could not well be surpassed in any section of the State. The show of vegetables was equal to the expectations of the most sanguine, and attracted universal attention. The products of female industry displayed, were such as to reflect great credit upon the fair artisans, whose taste, skill, and ingenuity, contributed so essentially to the success of the exhibition.

There were but two farms offered for inspection and premium, owing, probably, to those circumstances in regard to time already referred to. The two offered, however, are eminently worthy of distinction, and may be ranked among the first in the State, whether they are regarded as they present themselves to the eye of the spectator, or in the light of the modes of their cultivation.

The remarks offered at the table, were of a character eminently calculated to draw attention to the great subject of agriculture, and to extend a knowledge of its claims upon the services, patronage, and support of every good citizen. The address before the society was delivered by the president.

The fund of the society, invested according to the provis-

ions of the statute, amounts to the sum of \$3,000. The premiums and gratuities awarded for the year 1849, amount to \$608, including two small agricultural libraries, awarded to the towns of Dover and Needham. The expenses of the society, attendant upon its organization and conduct for the first year have been considerable, and much greater than will be required in future.

In this rapid glance at the transactions of the society, the president and secretary observe nothing so distinctly as the inducements thereby offered for continued, energetic exertions in the same course of action—holding on to all that is valuable in the experience of others, and looking to improvement and progress as the steps by which the highest standard of excellence is to be attained. If older societies have the advantage of the Norfolk in experience, the latter is in some degree compensated in the freshness, vigor and energy, which are the prerogatives of youth. The Norfolk society joins itself to the company of its elder sister societies, to assist by separate, though harmonious action, in speeding the cause, extending the knowledge, and advancing the interests of agriculture; and whenever, if ever, combined action shall be found necessary, its officers and trustees will be ready to unite in all honorable efforts in aid of those common objects which each and every society has been established to promote.

ON FARMS.

The committee regret that the number of farms entered for premiums did not equal the number of premiums offered by the society. The society offered five premiums, for which two applications only were made. The committee find themselves in an unpleasant situation in another respect. The society, in its infancy, proceeds at once to accomplish the objects of its existence, strides along beside old and well established institutions, demands, at its birth, its share of funds appropriated by the Commonwealth for kindred societies, and competes successfully for the prize of public estimation and encouragement.

The farmers of Norfolk county are taken by surprise. Their active friends have formed a society and adopted a constitution, organized and offered premiums, appointed committees, and issued circulars, before the existence of the society has become generally known.

Few men are willing to ask an examination of their farms, and none are able to prepare a statement, which, under other circumstances, would be considered indispensable, and which your committee believe should be hereafter required.

In addition to the duty of visiting and examining the farms offered for premiums, several of the committee have visited other farms in different parts of the county, without notifying the proprietors, and in some instances without their knowledge, and we are happy to state, that we believe there are many farms in the county which would compare favorably with similar estates in any county of the Commonwealth. Several farmers are in the habit of keeping an accurate account of the entire management of their crops and stock, the expenses of the family, and the improvements and cultivation of the farm ; also, of the several items of income and profit. Your committee proceeded to examine the farms offered for premiums, without expecting or requiring such statements from the applicants, and finding the appearance of the farms offered, the condition of stock and crops, and the general disposition and arrangements of the entire establishments, so perfectly satisfactory, they recommend the award of the society's first and second premiums.

Your committee "admire great farms," but they have been taught to believe it better to "cultivate small ones." We think there are many small farms in this county which will soon be brought into favorable notice. The proprietors of them are "men of the right sort ;" if they do not possess large estates, cultivate extensive fields, and rear herds of cattle, they manage well their own affairs, till their own soil, and get an honest living. Their is an air of cheerfulness and comfort about their estates, which their more wealthy neighbors oftener covet than enjoy.

Your committee recommend to the trustees of the society, to require, that future applicants for premiums furnish a full and

detailed statement of expenses and income, of the management and product of their different crops, and of the general treatment of their lands and their cattle; and they further recommend, that the committee on farms be hereafter requested to take into consideration the *means* of the farmer, as well as the length and breadth, the cultivation and improvement of the farm. The applicants will become more numerous, lands be better cultivated, and men who depend entirely upon their heads and their hands—men who most deserve, if they do not need, our encouragement—will come into direct and healthy competition with richer cultivators; and all will sooner realize, that agriculture is the “mother of the arts, the most honorable and the most prolific of good to the world, to which all other arts pay grateful homage, and with which science itself seeks honorable association.”

The applicants for premiums are, Aaron D. Weld, of West Roxbury, and Benjamin V. French, of Braintree.

By the rules of the society, your committee were required to make their examinations in the months of July and September. The farm of Mr. Weld was examined on the 3d of July. This is an old, ancestral farm. The farm, containing about two hundred and ten acres, has been, for many years, in a steady and systematic course of improvement. What the father designed and left unfinished, the son has completed. The present proprietor commenced his farming operations in 1835. Since that time he has accomplished much, each successive year furnishing evidences of his zeal and skill, perseverance and success. At the decease of his father, in 1835, there were many cross walls dividing the farm into numerous lots. These walls, in all, about one hundred and eighty rods, have been removed. Most of the stone has been buried and covered deep in the ditches of his reclaimed meadows. The balance has been reserved for other use. He has laid about seven hundred rods of heavy stone wall, in addition to what his father had built. At the entrances of the several lots he has gate posts of Quincy granite, with substantial gates, all of which can be, and generally are, kept locked.

Fruit trees are yearly added to the already extensive orchards,

Mr. Weld having an excellent nursery, which speaks its own praise. The ground is carefully cultivated around all his young trees, well dug up about the old ones, and never suffered to go to sod about either.

Mr. Weld has devoted much attention to his meadows, in the improvement of which he has been very successful. The main ditches are kept open, while the cross ditches are nearly filled with stones and covered. He has many acres, which, till recently, were comparatively worthless, from which he cuts an abundant crop of valuable grass.

He has constantly from forty to fifty swine, fed mostly on sour flour, shorts, corn meal, and such cheap feed as he can procure in Boston. The feed is prepared in vats, where it is fermented or cooked by steam, as is convenient. Vegetables, weeds, rubbish of all sorts, straw and soil, peat and muck, of which last he has an inexhaustible supply, are thrown into the yard, which is a manufactory for manure, that pays a handsome interest. Mr. Weld says, "that from an accurate account for a number of years the manure is *all profit*." He has "abandoned drawing manure from the city," as he "has realized enough from the hay consumed on the place, by boarding horses, and his own stock, and from his hogyards, for his farming purposes."

His buildings are well arranged, in fact, every arrangement on this place is good; carts, wagons, haycarts, and farming tools are kept under cover; here there is a place for every thing, and what is still better, every thing in its place.

Within the last two years, he has planted by the road side nearly three hundred trees, elms and rock maples; and he proposes planting, as time permits, the whole distance adjoining his estate. This plan we cannot too highly commend, as an example worthy of imitation, not by the agriculturist only, but by the community generally. Estates are benefitted, highways and private avenues are improved, and villages are beautified, at a cost merely nominal.

The forbidding appearance of the old schoolhouse is forgotten because a few trees, tastefully arranged, give it a cheerful aspect. The farmhouse wears a new complexion. The

shade trees about our houses of worship show a marked improvement in the public mind, while the churchyard, once so dreaded, especially by the young, affords a pleasant retreat for all, and the children of the living are induced to spend their leisure moments in the garden of the dead.

On the 6th of September the committee finished the examination of this farm, when all our previously formed good impressions were strengthened, and we unanimously recommend the award of the first premium of twenty-five dollars to Aaron D. Weld, of West Roxbury.

Your committee examined the farm of Mr. French, on the 31st of July. His farm and outlands contain one hundred and eighty-five acres. His homestead, about ninety acres, is composed of strong soil, originally abounding in rock ; much of it is thoroughly subdued, drained, and enclosed with heavy stone wall. It is situated on each side of the Monatiquot river, and is occupied as follows : mowing and orchard united, twenty-nine acres ; tillage and orchard united, ten acres ; nurseries and orchard united, eight acres. His outlands consist of salt marsh, fresh meadow, swamp for muck, plain pasture, and woodland.

In his mowing and tillage, his first object has been to get rid of surface and spring water, by under drains, drains under walls, and open drains ; next, to free the soil of stones, and put them in deep trenches to receive the wall. The lots to be enclosed are intended to be no larger than is necessary to require all the stones on the lot. As the land is stony, some of the lots are small. After the stones are removed, the land is ploughed deep and cultivated one year. The second year it is subsoiled, and all the stones then found, removed from the field. The soil is thus put into the very best condition for cultivation. His grounds are well laid out, and are easy of access by broad avenues and gates. Within the last thirteen years he has made and relaid thirteen hundred and fifty-one rods of wall.

His orchards generally appeared to be in a healthy condition. He has spared neither trouble nor expense in procuring the choicest varieties of fruit trees, which he has been planting yearly since 1818. His collection is large and select, including eighteen hundred and fifteen apple trees, seven hundred and

sixty-four pear trees, one hundred and ninety-nine cherry trees, one hundred and thirty-eight plum trees, four hundred and forty-five peach trees, and fifty-two orange quince trees, making in all, two thousand four hundred and thirteen standard fruit trees.

His nurseries, embracing eight acres, and containing all the approved varieties of fruit trees, appeared to be in fine condition.

His root crop, sugar beet, mangel-wurzel, carrots, ruta бага and flat turnips, grown principally for his cows, will amount this season, to about 2000 bushels. As he claims a premium for this crop, he will report to another committee the account of their culture, and the quantity produced.

He has about two acres occupied by dwarf pear, apple, cherry and plum trees, the smaller fruits, ornamental trees and flowers, which are neat and beautiful, affording a rich treat for the table, and probably as much profit as any other equal portion of his farm.

He has laid about one thousand feet of blind drains from two and a half to three feet deep, and about twenty-four feet apart. He has subsoiled ten acres to the depth of sixteen or twenty inches, partly over drains and partly not. The deep blind drains and the subsoil ploughing, he has found beneficial on stiff and moist lands, and recommends the practice.

He cultivates green crops for summer feed, his cows requiring something more than pasture grass during the hot season. This practice is recommended as a matter of economy, especially on a milk farm.

His stock,—six horses, twenty cows, six oxen and twenty swine,—was in fine condition. One man has the superintendence of his oxen, which are very fine, another, of his horses, and a third, his cows. The cattle are provided with both food and drink in their stalls, the cows are there milked, and every thing so arranged that the help about the barns is subjected to the least possible inconvenience and trouble. His barn yards and hogpens are supplied with muck, which is exposed to the frost and the atmosphere before using. By keeping his stock most of the year in the stall, his amount of fertilizing matter is greatly increased, and he is enabled to produce a great portion

of his compost on his own premises,—a great desideratum with every agriculturist.

The comforts about the house are such as might be expected. The men have a pleasant room, fitted up as a sitting room, for their own use, where they can have a fire when necessary, a dining room and sleeping chambers, all unconnected with the main house. Whatever Mr. French undertakes he finishes properly; his farm, as a whole, exhibits as much varied husbandry as is usually found in one establishment, and does him great credit.

The examination was concluded on the 28th of September, when this farm appeared better relatively, than on the first visit. Had it been convenient for Mr. French to have waited on the committee earlier in July, at their first visit, so that they could have seen all his crops in the field, they would doubtless have found it more difficult to make up their award. They recommend the award of the second premium of twenty dollars to Benjamin V. French, of Braintree.

WM. KEITH,
For the Committee.

PLOUGHING.

The committee on ploughing with single teams, report; that the land set apart for ploughing, was divided into lots of one-eighth of an acre each. There were nine competitors for the premiums. The ploughs were of the manufacture of Ruggles, Nourse & Mason, Prouty & Mears, and C. Howard; and two of the teams had drivers.

The conditions for ploughing were as follows:—The furrow to be not less than six inches deep, and the furrow slice not more than twelve inches in width. The committee requested the ploughmen not to hurry their teams, as good work would be more important than a little difference of time; that they would notice particularly the good appearance and docility of the cattle, and the management of the drivers. Each plough-

man to draw for the number of his lot, and all to start at the same time by signal.

Under these regulations, the first lot was ploughed in twenty-seven minutes, and the last in forty-two minutes.

All the ploughing was so well done, that it was difficult for the committee to decide to whom the premiums should be awarded ; and they would have taken much pleasure, (had they the power,) to have given premiums to all the competitors. The committee gave their whole attention to the work, during the ploughing, and examined the land carefully after the work was done. The premiums were awarded (by ballot) as follows :—

1st premium, \$8, to S. J. Capen, of Dorchester, with driver ; Ruggles, Nourse & Mason's plough ; time, twenty-seven minutes.

2d premium, \$6, to Jonathan French, Braintree ; Howard's plough ; time, forty-two minutes.

3d premium, \$4, to William Pierce, Dorchester ; Prouty & Mears' plough ; time, thirty-three minutes.

4th premium, \$2, to James M. Robbins, Milton ; Prouty & Mears' plough ; time, thirty-four minutes.

Your committee are of opinion, that drivers ought not be allowed to single teams. One yoke of oxen ought to be trained to plough with one man, as it is quite expensive to use a driver to a single team, and creates greater difficulty in awarding the premiums. The committee also, think it would be better not to confine the ploughmen to a specified depth and width of furrow, as the competitors found it difficult to arrange their ploughs so as to come within the rules. By adopting this suggestion, there would be a variety of ploughing, and a greater chance for improvement, and the committee would judge accordingly.

WILLIAM KEITH, *Chairman.*

GRAIN CROPS.

There were but two entries for premium: one for wheat, another for corn. We recommend, that the premium of six dollars be awarded to Rev. Charles C. Sewall, of Medfield, for wheat. And the first premium, of ten dollars, to Jared Allen, of Dover, for corn.

The crop of wheat was quite a large one, for Norfolk county, and of superior quality; when bolted, it was said to be nearly equal in whiteness, to much of the western flour, and of surpassing sweetness. Much has been said against raising this crop; yet the committee cannot but hope to see each farmer produce enough, at least, for his own consumption.

No extra labor seems to have been laid out on the corn-crop. According to the statement, allowing one bushel of shelled corn for two bushels of ears, there were ninety-seven and a half bushels to the acre; this is comparatively a large yield. Your committee believe that one hundred bushels, will soon be considered but a fair yield. A liberal supply of manure was given. Mr. Allen is particular in many of his statements; a cart-load of manure, however, is very indefinite; one may contain two feet, another, five or six. Your committee suggest, that cords be made the criterion.

The kind of manure is also, of great importance, and its application. Barn-cellar manure may mean, that entirely from cattle, or a collection of every kind, with swine upon it. A statement, we think, ought to give the kind of manure, whether unfermented or partially so, or fermented, and the heat having passed off, in what state it was applied to the soil.

The grain crop is the most important of all crops, its culture affecting the welfare of man over the whole globe. When a substitute failed, which had been relied on, as was recently the case, this article was carried across the broad Atlantic to sustain the famishing, at the same time, materially affecting prices here. It becomes us, therefore, particularly in this northern climate, to take advantage of every circumstance tending to favor us; to meet with skill, every adverse cause which tends to make us distrust, in the least, our ability to compete with

the southern and western farmers, in a pecuniary point. It will be conceded, that we now have a protection on grain which is enormous,—nearly three hundred per cent. on corn, two hundred on wheat ; and this will remain till manufactories are distributed over the whole union. One would suppose, that this protection would be a sufficient cause to make Norfolk county a grain-growing county. And so it would be, if the agriculturist looked at the matter as it is ; if they would begin their work as the man of science begins his. Perfection, however, will not be rapidly approached until agricultural schools are established.

Yet, with prudence, forethought, exactness in our calculations, at the same time, taking the known laws that govern production as fixed, and making all our labor subserve to their calls, what a difference there would be in the product. To say nothing of the loss, in not having the land half ploughed, half tilled, the waste of manure is enough to send blight and desolation on every farm. While the food for plants is rising in thick, dense gases from our manure heaps, could we but have them colored, so that they would be perceptible to the eye, how quick should we be at work to save that which is now more than half lost. This being done, and it can be, there seems no limit to production. The cultivators of our county would, at once, more than supply all their wants. Labor can now be profitably outlayed in raising grain crops, if the farmer would but cultivate perfectly his crops, make and save all manure within his reach, and rightly apply it.

Your committee regret, that no call was made for premiums for rye. They believe the rye crop one of the easiest, surest, and most profitable raised ; the straw alone, of late years, would remunerate the producer ; and if land is to be seeded down with any crop, rye is the best. They hope to see, at our next anniversary, a competition for premiums, which will show, that Norfolk is taking the lead in producing grain crops.

CHARLES ELLIS, *Chairman.*

Charles C. Sewall's Statement.

I present for your inspection, a specimen of black sea wheat, raised by me this last summer. The soil upon which it was raised, is a deep loam, upon a gravelly subsoil. It was cultivated last year with corn, and well manured, and ploughed again in the fall. In the spring of this year, I spread upon it about ten cart-loads of compost manure, from the hogsty and barn-yard, cross-ploughed and harrowed it, and sowed, April 23d, one bushel of good seed, which had been soaked in carbonate of ammonia ten hours. It was then rolled with a stone roller. After the grain had sprung up about two inches, I spread upon it two barrels, or six bushels of wood ashes, unleached. And from eighty-six rods of ground, I cradled two horse loads of straw, yielding sixteen and a half bushels of clean grain.

MEDFIELD, *September 24th*, 1849.

Jared Allen's Statement.

The acre of ground on which the corn was raised, which I offer for premium, was in grass last season, of a strong loamy soil, and was ploughed the 1st of October, eight inches deep, and furrowed in April. I spread seventeen cart-loads of manure, from my barn-cellar, ploughed it in, harrowed and ploughed again before planting, which was between the 15th and 20th of May. It was furrowed three feet three inches one way, and the hills were placed twenty inches apart, the other way, and there were twenty cart-loads of rotten yard-manure put into the hills; also, one table-spoonful of plaster and five kernels of corn, and I put another table-spoonful of plaster on each hill before hoeing. I ploughed between the rows, and hoed twice. The stalks were cut, after the leaves were somewhat turned. The rod of ground which was harvested and measured, to estimate from, was selected by Rufus Battle and H. W. Jones, who were particular to make a true estimate, and we found there were on the acre, one hundred and ninety-five bushels of ears. On the rod gathered, there were forty-four hills, and one hundred and forty-five ears, and one hundred and twenty ears made a bushel, after being well shaken down.

DOVER, *November 14th*, 1849.

ROOT CROPS.

The committee (A. D. WILLIAMS, JR., *Chairman*,) have awarded to

B. V. French, for the best conducted experiment, in raising sugar beets, premium,	\$4 00
B. V. French, for the best conducted experiment, in raising carrots, premium,	4 00
B. V. French, for the best conducted experiment, in raising mangel-wurzel, premium,	4 00
B. V. French, for the best conducted experiment, in raising flat turnips, premium,	4 00
Wm. B. Kingsbury, for the best conducted experiment, in raising parsnips, premium,	4 00

Benjamin V. French's Statement.

I make application for premiums, on the culture and yield of the following root crops: the mangel-wurzel, sugar beet, carrots, and flat turnips. The mangel-wurzel, sugar beet, and carrots, were grown in an orchard. The land was manured with about twelve cords of strong compost to the acre. My principal object was, to benefit some pear trees, which had been neglected. The land had been broken up in the sod, the year previous. This year, early in May, the manure had been spread broadcast, and ploughed in; harrowed, cross-ploughed, and levelled with a light harrow. It was then ridged, and raked, and the seed was put in with a drill-barrow, on the 19th and 21st of May. They were hoed carefully, as soon as they were up, which was about the 25th June. They were soon after weeded, and thinned out, and a final hoeing given on the 20th, 23d, and 24th July, and were harvested on the last week of October. It should be borne in mind, that no crop will succeed as well, subject to the draught of the roots of trees, as they will in a clear field.

The yield, as per vouchers, is as follows:—The roots, being freed from hair-tops and earth, were weighed, and computed at fifty-six pounds per bushel.

Mangel-wurzel on a half acre, four hundred and twenty-one and six fifty-sixths bushels.

Sugar beet, on a half acre, five hundred and two and forty-four fifty-sixths bushels.

Carrots, white and orange, on one-half acre, three hundred seventy and thirty-three fifty-sixths bushels. The flat turnips were grown where peas had just been taken off, and had no other manure than was unexhausted by the pea crop. The ground was ploughed, and harrowed flat, and the seed was sown by a drill-barrow on the 7th of August, hoed August 18th, thinned out and hoed again August 31st, and harvested Nov. 14th. These were grown in an orchard; the tops and roots were carefully taken off; weight, fifty-six pounds to the bushel. The yield on a half acre is two hundred and sixty-seven and thirty-eight fifty-sixths bushels. The drought was a great injury to the yield of the carrots, mangel-wurzel, and sugar beets, and the flat turnips were harvested too early for their greatest yield, considering the time they were sown, being about a month later than is usual.

BRAINTREE, *November 15, 1849.*

William B. Kingsbury's Statement.

I have raised, upon 10,995 feet of ground, fifty-eight barrels of closely packed parsnips. The piece of land upon which they grew, was trenched four years ago this fall, and parsnips have been planted every year since; each year, I have had a greater crop than the year previous. The manure was ploughed in, in the fall, and consisted of manure from the hog-sty, where I had put a large quantity of sand and horse manure. The exact quantity of manure put upon the land, I cannot give, but it was well manured.

ROXBURY, *November 14, 1849.*

MILCH COWS AND HEIFERS.

It is the opinion of the committee, that our exhibition, as a whole, will compare favorably with that of any other county in the Commonwealth. The show of milch cows was highly respectable ; many of them fine and productive. Another year, we hope to see them increased, and the quality improved. The display of heifers was larger in number, and more beautiful in appearance, and fully realized the expectations of the committee. Milk is an article, in the production of which, we are deeply interested, as it forms a part of the daily food of almost every individual in the county. Whatever, therefore, is calculated to increase the production of an article of general use, should be considered of primary importance.

The late Mr. Curwen strove to awaken an interest upon this subject ; for, in his report to the British Board of Agriculture, twenty-two years since, he stated that milk, compared with other species of food, is not only the most nutritious, but the cheapest article of subsistence, that can be produced for the support of man ; for that the same quantity of agricultural produce converted into milk, will afford a larger proportion of human sustenance, than in any other shape.

The committee would therefore beg leave, to offer some suggestions in this connection ; and first, they would remark upon the importance of careful and tender treatment of cows. It is absolutely indispensable, that they should be warmly and comfortably housed, as a matter of economy, both in the saving of feed, and in the yield of milk ; for a cow well housed in cold weather, will yield much more than another, equally good, which is not well housed, (the feed being the same,) for the simple reason, that the cow well sheltered needs less feed to sustain the animal heat, than the one requires that is not so sheltered. Some farmers contrive their stables so as to have water before the cows at all times, which tends to increase their milk, particularly in cold and wet weather, when they should be confined to the barn most of the time.

In many parts of the county, where the natural grasses abound, and the feed is backward in spring, it has been found

profitable to sow winter rye in July and August, for feeding to cows the following spring, as it will afford a good bite for them, fifteen or twenty days earlier than grass. By this means, cows may be kept upon green fodder, until the grass has grown so as to afford them full feed, at the commencement of the pasturing season. The expense of the rye will be small, as it may be sown after a crop of hay, or early potatoes, has been taken from the land. It has also proved good economy, by many farmers, to sow Indian corn, of the southern variety, in drills, at the rate of three bushels to the acre, which will, at a trifling expense, (as it needs no weeding or hoeing,) enable the farmer to feed his cows as well at the usual dry part of the summer, as in the best season for grass, in the month of June.

Your committee insist upon the great importance of gentleness and kindness, in the treatment of cows, to the end that they may yield their milk freely ; *for cows will not yield their milk freely, under harsh and cruel treatment* ; and it is the opinion of your committee, that more loss, in the production of milk, is occasioned by the bad temper of the milker, who vents his anger upon the unfortunate cow, than by all other causes combined. The committee would suggest the importance of care and attention, in the selection of cows for milk. It is their opinion, founded upon long and careful observation, that the cows in this county might be made to yield, without any additional expense, at least one quart per day, on an average, throughout the year, more than they now do, by the observance of due care in selecting, and proper attention in feeding and milking them. This addition of yield, at twelve and a half cents a gallon, (which is the price of milk in most towns in this county,) would make a difference of eleven dollars and forty cents, annually, in the earnings of each cow. An amount almost equal to the interest of two hundred dollars a year, may be realized, as the committee verily believe, by care in these particulars.

On Milch Cows of the First Class.

The committee award the first premium, of eight dollars, to

Warren Mansfield, of Braintree. This was a finely formed animal, and Mr. Mansfield produced satisfactory evidence, that she averaged twenty-two quarts of milk per day, from June 10th to June 20th, and seventeen quarts per day, from September 10th to September 20th.

Second premium, of seven dollars, to Thomas Motley, Jr., of Roxbury, for his cow of the Durham breed. Mr. Motley stated, that she was not so remarkable for the large quantity of milk she gave, (never having exceeded fifteen quarts per day,) as for the fact of her not having been dry a single day, for three years, and having produced three calves in that time.

Third premium, of six dollars, to Benjamin V. French, of Braintree, for his cow, "Durham." There were five cows exhibited by Mr. French, in addition to the one just described, all of which were fine animals, and added much to the interest of the show. His three-year old heifer, in milk, was beautiful and promising.

On Milch Cows, from Three to Six Years Old.

First premium, of six dollars, to Jonathan Beale, of Milton. The two cows presented by Mr. Beale, were twins, and first rate animals.

Second premium, of five dollars, to S. J. Capen, of Dorchester, for his cow, three years and two months old; three-fourths Durham, and one-fourth native. Mr. Capen is entitled to much praise, for his contribution to the show, (in addition to the above,) of six heifers and calves, of fine appearance and promise.

Third premium, of four dollars, to G. G. Hubbard, of Needham. Mr. Hubbard contributed liberally to the show, by placing in the pens two fine cows, and two beautiful heifers.

Heifers, Three Years Old, in Milk.

First premium, of six dollars, to Franklin King of Dorchester, for his fine imported heifer, of the North Devon breed; really a well proportioned and beautiful animal.

Second premium, of five dollars, to Charles C. Sewall, of Medfield, for his red heifer, three years old. Her two calves, thirteen months and two months old, were promising animals.

Third premium, of four dollars, to O. A. Taft, of Roxbury, for his heifer, two years and three months old. Mr. Taft exhibited three other heifers, all very handsome, and entitled to special notice.

CHEEVER NEWHALL, *Chairman.*

ON THE DAIRY.

The committee report, that there were but two specimens of butter offered, and they award the first premium of \$10 to Rev. Charles C. Sewall, of Medfield.

Charles C. Sewall's Statement.

I offer for premium, two boxes of September butter, made last week, and containing twenty pounds. I have made since the 23d of May, eight hundred and ten pounds of butter. I have milked seven cows, some of which, calved in December or January, until the last of August; and since that time, nine cows, two of which calved in August. The feed of all, has been grass, and occasionally corn-fodder, until the last week, when, instead of the corn-fodder, they have had two quarts each, of shorts, per day.

The milk was kept in a cool cellar, during July and August; at other times, in a cool room above stairs, and stood from thirty-six to forty-eight hours. The pans are tin. The cream was churned twice in each week. The buttermilk was thoroughly drawn out, by working the butter twice in successive days, with the hands. The salt used, was fine, ground rock salt, and about one ounce to the pound of butter.

My family is large, numbering from fourteen to seventeen persons at my table, daily; and we have used the milk and cream of these cows without stint. The butter has all been made and put up by my eldest daughter.

MEDFIELD, *September 24th, 1849.*

WORKING OXEN.

Merely to state, that A B was entitled to the first premium, and C D to the second, and so on, however gratifying the announcement of these facts might be to the successful parties and their friends, would seem to furnish but very little practical information to others who may not have witnessed this part of the day's exhibition.

It is a common remark, and not more common than true, that we are sadly deficient in agricultural statistics and accurate data for our government, in working a farm to the best advantage. The institution of agricultural societies was intended, among other important objects, to remedy this deficiency.

In looking over some of the reports of other societies, the committee regret to say, that it would be difficult, if not impossible, to make a comparison of the relative performances of the oxen of one county with those of another. What would be termed a "pretty considerable hill" in the county of Norfolk, would not be thought much of in Berkshire, and would hardly be accepted as a gift in some counties in New Hampshire. A yoke of oxen used to drawing the green lumber over the clay roads in Maine, with a depth of rut half way to the hub, would feel it to be mere sport, to draw two tons up a short hill in Dedham. With these impressions, the committee have caused Cart Bridge Hill, where the work was done, to be accurately measured, and its elevation ascertained. The distance over which the oxen drew, is five hundred and fifty feet, the height of the hill, twenty-eight feet; which is a grade of about two hundred and eighty feet to the mile. The weight of the load, exclusive of the cart, was two tons, the wheel tire, three and one-half inches. The time ranged from two and one-quarter to three and one-fourth minutes up, and one and one-half to two and one-half minutes down. The tongue of the cart being not long enough to enable the larger oxen to work fairly, in backing up hill, and no time to remedy this defect, this part of the work was necessarily omitted. This fact is now mentioned, that it may not occur again. The road is a firm gravelly crown, excepting about one rod at the bottom, or starting place, which is

sandy. The age and weight of the oxen are also noted, as forming, in the opinion of the committee, elements necessary, in estimating the work performed.

From the ease with which the work was done, it is believed, that fifty per cent. more load might have been added, without taxing the teams to the extent of their ability. The oxen were in most excellent condition, and their appearance bore ample testimony, that they had good reason to "know their owners' crib."

A very useful lesson was taught by the teamsters, on this occasion, viz., that quietness of manner and gentle urging, are much more efficient means of getting "a heavy load up hill," than boisterous scolding, or goading the operative power.

To G. A. Parker, of Roxbury, first premium, \$8. Oxen, six years old, weight, 3,300. S. Smith, teamster.

Asa Rideout, of Dorchester, second premium, \$6. Oxen, six years old, weight, 3,100. Himself, teamster.

A. D. Williams, Jr., of Roxbury, third premium, \$5. Oxen, six years old, weight, 3,300. A. Boothby, teamster.

Jona. French, of Braintree, fourth premium, \$4. Oxen, five years old, weight, 3,060. Pratt, teamster.

THOMAS MOTLEY, *Chairman.*

POULTRY.

Largest variety, \$3, E. W. Bray, Cantón.

Best lot shanghaes, \$3, C. B. Marsh, Roxbury.

Best lot dorkings, diploma, Eben. Wight, Dedham.

Best lot turkeys, \$3, Lem'l Kingsbury, Needham.

Best lot geese, \$2, A. B. Ware, Stoughton.

Best statement, diploma, H. W. Jones, Dover.

Until quite recently, the breeding and rearing of poultry, in this section of the country, have been considered too insignificant to require any, or very little, notice at our agricultural exhibitions. Poultry, as will be shown, is certainly not the least important article of stock to the farmer ; and the subject is now

beginning to assume an importance which the committee hope may produce an honorable competition at our fairs for the best stock—that stock, which ever it may be, that shall give the best fowl—those giving the greatest amount of meat with the least offal, and which shall, at the same time, give the largest number of eggs, or return in profit for the amount invested.

That the rearing of poultry for market can be made profitable, your committee could produce facts from well authenticated sources, which should convince the most incredulous; but they will confine themselves to statements which have been handed in to the society, and a few statistical remarks from reliable sources.

The article of poultry is readily converted into money, and is probably quite as readily prepared for market as any other article of stock produced on the farm. The expense of feeding the best stock is no more than would be the expense of feeding and rearing the poorest dunghill fowl; while the return shows a heavy balance in favor of the large bodied and fine meated fowl, with little offal. Let each one who is desirous to improve his stock, make use of either a Spanish or Dorking rooster, and he will find an improvement in the cross, giving him a heavier bodied and whiter meated fowl, added to which, will be an increase in the size of the eggs.

Our convenience to the London market, by the aid of steamers, weekly, enables the farmer, through the egg merchant, to make sale of his surplus eggs, in that quarter of the world. The wholesale price of the Spanish hens' eggs, in the above market, at a recent date, was six shillings to nine shillings, (\$1 33 to \$2.) per dozen; by retail, twelve shillings to eighteen shillings. The Spanish hens are layers of the first order, and the eggs of the largest size and best flavored. Where eggs are intended for exportation, the hen should be deprived of the male.

The committee deemed it a duty incumbent on them, to make a visit to the poultry yards of the only two contributors, (Mr. Bray and Mr. Marsh,) who could come within the range of premiums, having furnished statements, in part, in relation to the fowls shown; and even theirs' were so incomplete, as to oblige the committee to give it in the form of gratuities.

At Mr. Bray's, they found his poultry, which is in great variety, in good condition, and his arrangements for keeping distinct his different breeds of poultry, admirable. He is as yet, a novice in the breeding of poultry, but his patience and indomitable perseverance in this branch, will lead to results which must have a beneficial influence on his neighbors.

At Mr. Marsh's, the committee had an opportunity to examine more fully, his stock, than they had been able to do as boxed for the exhibition. Of the imported stock, he has remaining on hand, the rooster and one hen; the issue of that stock having been mostly disposed of to Francis Alden, Dedham, a large contributor for the day. In answer to the inquiries of Mr. Marsh, as to their flesh, he says:—"We killed a rooster when about six months old, which, when dressed, weighed almost six pounds, and a nicer chicken was never placed upon the table." The weight of roosters when fully grown, it will be seen by Mr. Marsh's statement, is twelve pounds. The committee requested Mr. Alden to weigh some of his chickens, (hatched in June,) and the return shows eight pounds for the rooster; the pullets of the same breed, (Mr. Alden says,) "have produced eggs liberally, for the two weeks last past."

Trusting that some of the members of this society may feel an interest sufficient to learn the value and importance which the poultry and egg trade occupies in the marketable world, they have taken some pains to procure statistics relative to the sale of poultry in the Boston market, and also, in relation to the egg trade of Boston.

The breeding and rearing of poultry, are scarcely second in importance to that of any other article of stock in New England.

By reference to the Agricultural Statistics of the United States, published in 1840, it will be seen that the value of poultry in the State of New York, was *two millions three hundred and seventy-three thousand and twenty-nine dollars*; which was more than the value of all the swine in the same state; nearly equal to one-half of the value of its sheep, the entire value of its neat-cattle, and nearly five times the value of its horses and mules.

The amount of sales of poultry at the Quincy Market, Boston, for the year 1848, was *six hundred and seventy-four thousand four hundred and twenty-three dollars*. The average sales of one dealer alone, amounting to twelve hundred dollars per week, for the whole year. The amount of sales for the whole city of Boston, for the same year, (so far as obtained,) was over one million of dollars.

The amount of sales of eggs, in and around the Quincy Market, for 1848, was one million one hundred and twenty-nine thousand seven hundred and thirty-five dozen, which, at eighteen cents per dozen, (the lowest price paid, eleven and one-half cents, and the highest, thirty cents per dozen, as proved by the average purchases of one of the largest dealer's books,) makes the amount paid for eggs, to be *two hundred and three thousand, three hundred and fifty-two dollars and thirty cents*. And from information already obtained from other egg merchants, in the same city, the whole amount of sales will not fall much, if any, short of a million of dollars, for 1848.

ELIJAH PERRY, *Chairman*.

Christopher B. Marsh's Statement.

The large rooster and black hen were brought from Shanghai, China, May, 1848. They are two to three years old. The rooster weighed twelve pounds last May; in June, we had ten hens, four of which were pullets, raised from those brought from Shanghai.

From the 10th to the 20th of June, inclusive, these hens laid ninety eggs. In July, we had seven hens, which laid, from the 10th to the 20th, inclusive, fifty eggs.

The present month, we have eight hens, which laid, from the 1st to the 10th, inclusive, fifty-seven eggs. They have been fed, chiefly on corn, and shut up in a small enclosure. The eggs have *more than paid* the expense of keeping.

ROXBURY, *September 24th*, 1849.

Hiram W. Jones's Statement.

My fowls have a warm house, seventeen by twelve feet, in two apartments, with a jail in one part, three by four feet, to keep those in, which are inclined to set when I do not wish to have them. The house is furnished with boxes, which are frequently supplied with sweet, soft hay for nests. In this house they are kept, except during days in winter when there is no snow on the ground, and at such other times when they can do no damage abroad. Food of some kind, and water, are always kept in the house, free of access.

Barn yard fowls, in account current from January 1st to September 22d, 1849.

				DR.
To 17 fowls,	valued at 40 cts.,	-	-	\$6 80
" 8 bushels corn,	" 90 "	-	-	7 20
" 4 " buckwheat,	" 80 "	-	-	3 20
" 4 " cob-corn meal,	" 50 "	-	-	2 00
" Refuse bread and potatoes,	-	-	-	2 00
				<hr/>
				\$21 20

				CR.
By 15 fowls on hand,	valued at 40 cts.,	-	-	\$6 00
" 30 chickens,	" 30 "	-	-	9 00
" 115 dozen eggs sold,	-	-	-	19 41
" 17 chickens sold,	-	-	-	7 51
" 2 old fowls sold,	-	-	-	1 16
" 30 dozen eggs, used in my family, estimated,	-	-	-	3 75
" 2 loads manure,	-	-	-	2 55
				<hr/>
				\$49 38
				21 20
				<hr/>

Net profit for 8 months and 22 days, - - \$28 18

By the process adopted to secure the manure and convert it with the compost heap, it proved as valuable as the same weight of guano, applied in the same manner.

DOVER, September 25th, 1849.

ON IMPLEMENTS.

The case contemplated by the society's rule, of rewarding only a newly discovered implement, invented by the exhibitor, did not occur, with the exception of the so called hydraulic churn, manufactured by John Andrews, of Woburn. This churn was certainly of a construction new to the committee, and is probably a valuable addition to the numerous instruments for making butter, already known ; it has the apparent merit of great labor-saving properties. In the absence of all experimental evidence of its operation, the committee regard it as beyond their duty, so far to endorse its value, as to recommend it for your premium ; still, they regard it as worthy the trial of our dairy-women. A very fine collection of implements, from the principal agricultural warehouses in Boston, was exhibited, besides some from several towns in this county. These instruments were, generally, of the most improved construction now in use ; exhibiting, in a high degree, the inventive genius of New England, and the great skill attained in our community, in the working of iron. There is a strong attachment to old usages, among our practical farmers, which has some advantages, but which occasions much delay in adopting valuable improvements. This fact is illustrated, by the hesitation shown in the use of the horse-rake, already known for years. At the present rate of wages, the use of this machine will save fifty cents per ton in the making of hay ; and yet, there is not one farmer in ten, throughout the county, that uses it at all. There were four different kinds of horse-rakes exhibited, all having some peculiar advantages ; and the committee, without expressing a preference for either, believe that the use of the poorest that can be found, is preferable to the laborious process of hand-raking. If our farms are not productive, some other cause than the want of good tools must be sought for ; and the committee believe, that the implements for agricultural operations, procurable among us, are not surpassed in the civilized world ; and this opinion is supported by the testimony of intelligent foreigners, familiar with the subject.

For the committee,

JAMES M. ROBBINS.

FRUITS AND FLOWERS.

The committee cannot refrain from expressing their approbation, of the manner in which the horticultural products were arranged, and to acknowledge how much the society is indebted, for success in this department, to the ladies, for their contributions of the beautiful gems of nature, and their untiring efforts to place them in such a position as to command attention.

They would also solicit the attention of the society to the *Diana grape*, raised from seed, and presented by Mrs. Diana Crehore, of Milton. This variety, in the opinion of the committee, will be found equal, if not superior, to any native grape in this country.

The committee would further state, that much, very much, remains to be done, in this department. The beautiful must be blended with the useful, the elegant with the profitable. The time will come,—it must come,—when the question, now so often asked, *What is the use of flowers?* shall be exchanged, and the interrogation will be in the language of another, *Who would wish to live without flowers?* Where would the poet fly for his images of beauty, if they were to perish forever? Are they not the emblems of loveliness and innocence?—the living types of all that is pleasing and graceful? We compare young lips to the rose, and the white brow to the radiant lily; the winning eye gathers its glow from the violet, and the sweet voice is like a breeze kissing its way through the flowers. We hang delicate blossoms on the silken ringlets of the young bride, and strew her path with fragrant bells, when she leaves the church. We place them around the marble of the dead, in the narrow coffin, and they become symbols of our affections; of pleasures remembered, and hopes faded; of wishes flown, and scenes cherished the more, that they can never return. Still, we look to the far off spring, in other valleys,—to the eternal summer beyond the grave,—where the flowers which have faded shall again bloom in starry fields, where no rude winter can intrude. They come upon us in spring, like the recollections of a dream, which hovered above us in sleep, peopled with shadowy beauties and purple delights, fancy-

broidered. Sweet flowers ! that bring before our eyes, scenes of childhood ; faces remembered in youth, when love was a stranger to himself ! The mossy banks by the wayside, where we so often sat for hours, drinking in the beauty of the primroses with our eyes ; the sheltered glen, darkly green, filled with the perfume of violets, that shone in their intense blue, like another sky, spread upon the earth ; the laughter of merry voices, the song of the sweet maiden, the downcast eye, the spreading blush, the kiss, ashamed at its own sound,—are all brought back to the memory, by a flower !

SAMUEL WALKER, *Chairman.*

DOMESTIC MANUFACTURES.

The committee cannot withhold the remark, that the ladies of the county have contributed very much to the variety and excellence of the exhibition. The number of wrought hearth rugs, displaying taste and ingenuity, was very large ; and considering the materials of which they were composed, the regard to economy, the patience and perseverance necessary to the execution of the work,—the domestic character of the *fair* artisans deserves as high commendation, as the product of their labor and skill.

No articles were presented, which taxed the taste and judgment of the committee so much as counterpanes. The number was large, and the quality of all excellent.

The committee, and we presume the public, were disappointed in not witnessing at the exhibition, a greater number of straw bonnets. The season of the year, and the equivocal state of the fashions, may partly account for the deficiency. An exhibition in April or May, would doubtless present such an array of bonnets, from the western part of the county, as could not be witnessed in any other part of the Union. The committee are assured, that this department of domestic industry will be represented by a greater variety, another year.

The contributors to the department of *boots and shoes*, considering the extent and importance of this business in our

county, were not as numerous as the committee would have been glad to see. A branch of industry, so useful, and one from which so many derive their entire support in this county, should be liberally encouraged. The committee would suggest to the trustees, whether it would not be expedient, in future exhibitions, to embrace in their catalogue for premiums, a greater variety of the standard kinds of boots and shoes.

In examining the statistics of the county, taken in the year 1845, by order of the Legislature, the committee perceive, that in many articles of domestic manufactures, and in some of the natural products, it sustains a high position. As compared with any other county in the Commonwealth, in the manufacture of boots and shoes, Norfolk stands the *third*; chairs and cabinet ware, the *third*; carpeting and leather, the *second*.

In this county, five-eighths of all the straw bonnets in the State are made; five-eighths of all the cotton thread; one-half of all the silk; the cordage, the lead, the hewn stone for building; two-thirds of all the fire engines; three-fourths of all the starch; nine-tenths of all the chocolate; and more Britannia ware than in any other county; and more fruit raised, with a single exception.

While, in the manufacture of some of these articles, the county has comparatively declined, since the above date, in others it has greatly advanced. From the natural resources of the county,—the skill, industry, and enterprise of its population,—there is much to hope. There can be but one opinion, as to the beneficial tendency of an annual exhibition of its manufactures and products, to develop its resources, and stimulate its enterprise. And the committee express the hope, that those who have contributed, the present year, to make the exhibition meritorious and attractive, will continue their contributions from year to year; and that others, stimulated by their example, will combine to give character, at home and abroad, to all our manufactures, and success and prosperity to the capital, skill, and labor, employed in their execution.

LUTHER METCALF, *Chairman*.

ON ESSAYS.

The committee to whom were referred those essays which have been sent in for premiums offered by the society, have examined the same, and report ;—

That but two essays were placed in their hands upon the nature and treatment of the potato disease. Neither of these seemed to the committee to supply the desiderata upon this most difficult topic.

One other paper, entitled "Remarks on the agriculture and manufactures of Norfolk county," with tables of statistics attached, was submitted to the committee, and was by them deemed of so interesting a character as to merit publication. They therefore recommend that the premium of \$10 be awarded to the author, and that it be printed in the transactions of the society.

C. F. ADAMS, *Chairman.*

ESSAY. REMARKS ON THE AGRICULTURE AND MANUFACTURES OF NORFOLK COUNTY.

It cannot be expected, of course, that any reliable statistics of the agriculture and manufactures of the county can be made up as they stand at this time. Such a labor no man or committee would undertake ; and, indeed, considering that all the information we seek will be obtained next year by the officers of the United States, such a proceeding would be labor lost.

It seems to be well, however, that the society should have some starting point in this matter,—something on its own records to compare with, hereafter,—and to that end I have compiled from the Massachusetts Report, for 1845, the statistics of agriculture for our county in that year,—a copy whereof is herewith presented for the use of the society. I have also appended to it a compilation from the United States census for 1840, in order to show the relative condition of the agricultural interests at the two different periods.

By this comparison it will be perceived that our agricultural productions were seriously decreased in the intervening five years.

Wheat had fallen off 94 per cent.

Barley " " 70 "

Rye " " 29 "

Corn " " 14 "

Oats " " 14 "

Potatoes " " 7 "

Hay " " 7 "

These returns, and especially those made by the State, are not, I believe, nearly so correct as they should be, and therefore I do not place implicit reliance upon the results they show. Still, I think it will be safe to assume, that there was a general decrease in all the productions of the soil excepting roots and fruits; and in these articles it is impossible to make any comparison, owing to the different manner of coming at their values and of classifying them, pursued by the two sets of persons employed on the work. In fruits, I have no doubt there was, and has continued to be, a large gain, and probably in esculent roots, also, with the exception of potatoes.

Assuming the population of the county in 1845 to have been 60,000, and that six bushels of bread stuffs per head is the ratio of consumption, we required for subsistence that year about 360,000 bushels, It will appear on reference to the statement herewith, that we produced of corn, wheat, and rye, only 100,000 bushels, a little over one-fourth of our actual wants, and leaving a deficiency of 260,000 bushels to be imported and paid for by the proceeds of labor otherwise bestowed.

It may not be denied, for it is undoubtedly true, that labor can be often disposed of at a better profit than the soil will give, and the temptation is strong to engage in other pursuits, and *buy bread*. Yet we are taught by experience, that all other pursuits are fluctuating and uncertain,—that the best and most profitable manufactures may be, and oftentimes are broken down or rendered unproductive, and that those who depend on them are driven sometimes to hard extremities for a living. Not so with agriculture. The surplus corn of the farmer may

sometimes be of comparatively small value, but what he needs of it to sustain life does not fluctuate—a bushel of corn for home use, is always a bushel of corn, and will feed just as many mouths at one time as another; its intrinsic value to the producer therefore—until he comes to a surplus—is always the same. There may be times when he can purchase three bushels for a day's labor, but there will be times when his labor in other pursuits is of no value, and will not purchase any. I have ever thought it the part of wisdom, therefore, for every country,—and why not every county and every town,—which has land enough, to *raise its own bread*, to rely upon nothing for that, but labor expended on the soil. The farmers of Norfolk, although they have not the best land in the world, can, by improved cultivation and diligent attention, produce bread enough to supply the county; and, as they have a market at their own doors for every surplus article that they raise, and at good prices too, it seems a little surprising that this source of profit and prosperity is not more carefully looked to.

The whole value of our productions of the field			
and the forest in 1845, was,	-	-	\$1,055,620
The value of sheep, cattle and swine slaughtered,			
may be called,	-	-	130,000
The value of the fisheries should rather be added			
here than to manufactures,	-	-	62,068
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Making a total of	-	-	\$1,247,688
The consumption of the county of all the products			
of the earth and the sea, exclusive of manufactures, was not less than	-	-	\$1,800,000
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Leaving a deficiency of	-	-	\$ 552,312

paid out of the profits of labor not expended on the land or the sea, but mainly in manufacturing establishments. The profit so realized, was not only amply sufficient to cover this deficiency, but to leave a large surplus; still, we all know that some employments which were then very lucrative, have sadly fallen away since, and we may perceive that the rivalry to our manufactures generally, which is daily increasing in other States,

threatens to curtail, if not destroy the profits still realized from that source, and furnishes a strong reason in favor of looking more earnestly to agricultural pursuits, and especially to such improvements in cultivation as will tend to produce a better reward for agricultural labor.

The question is often raised whether agriculture can be rendered profitable here in competition with the fertile lands of the West, and it is generally answered in the negative. Perhaps this answer is wrong; at any rate it can do no harm to show what is done in the West, and then let our farmers judge for themselves. The main productions of Ohio, are corn, wheat, oats and hay, and of these an average crop is sixty bushels of corn, seventeen of wheat, forty of oats, and two tons of hay to the acre. The average prices of these productions throughout the state, last year, were as follows, viz.: corn 28 cents, wheat 81 cents, oats 18 cents, hay \$5,—or within a fraction of these in each case. An acre of corn then, in Ohio produces \$16 80; of wheat \$13 77; of oats \$7,20, and of hay \$10. The cost of cultivation is much less there than here, but I believe that even with ordinary skill, every good farmer in this county can realize more net profit from an acre of land, after paying *all* expenses, than the highest gross income of an acre in Ohio; and if this be true, why is our agriculture suffered to languish, or why is it considered an unprofitable employment?

There is another important consideration in this connection, which should receive the attention of farmers, viz.: the facility with which laborers can be now procured, and at low prices. A large portion of the Irish and German immigrants are well adapted to agricultural labor under the vigilant eye of an intelligent overseer. These people are forcing themselves upon us every year in vast numbers; they must be supported by some means, and why not make their labor productive by employing it upon the soil? Such an arrangement cannot fail to be beneficial to all parties, for while the farmer obtains the requisite amount of labor at such reasonable prices as cannot fail to leave him a profitable result, the poor immigrant is saved from the temptation to steal, the necessity of begging, or a resort to the

almshouse, until he becomes acquainted with our country, our manners, customs and pursuits, and is able to provide for himself in a better manner. Experiments of this sort have been made with good success, and in the actual scarcity of native labor to be hired for moderate yearly or daily wages,—such as the farmer can afford to pay,—the foreign supply which is forced upon us can be used in this manner, without taking bread from the mouths of our own people, while the poor foreigners will be enabled not only to get their own living, but to become a source of profit to, instead of a burden upon, the country of their adoption.

The manufacturers of Norfolk county present a different aspect. Their total value in 1840, was \$5,982,400, and in 1845, they had increased to \$8,748,400, showing a gain in five years of \$2,766,000,—or nearly fifty per cent. Some of the leading articles stood comparatively as follows, viz.:

	Cotton.	Wool.	Straw.	Leather.	Stone.	Metals.
In 1845,	680,908	623,013	650,097	2,873,150	492,500	1,307,347
" 1840,	524,100	257,000	404,613	1,993,291	360,900	403,800
Gain,	156,808	366,013	245,484	879,859	131,600	903,547

In the manufactures of straw, boots and shoes, cotton, and wool, the number of females employed, exceeds 6,500, and for this reason they are undoubtedly the most profitable to the county, inasmuch as a very large portion of this labor would be otherwise nearly useless. And prominent over all, stands the straw business, producing in 1845, the sum of \$650,000 almost entirely the result of female labor.

Whether our manufactures have increased in the aggregate since 1845, is a matter of doubt; those of iron and wool have felt severely the pressure of foreign competition, produced by the tariff of 1846, and the profit arising from them has been essentially decreased, if not entirely destroyed. The same cause has produced a somewhat similar effect, though not so serious, perhaps, upon many other branches of our manufacturing industry, and these facts give more force to the remarks made under the head of agriculture, upon the impolicy of abandoning a pursuit so sure in its results, and rushing into other employments which, however profitable in the outset, may be totally

prostrated by causes over which we have no control. Under the present arrangement of our tariff, we are brought into more direct competition with foreign labor, and the inevitable result is, that our labor must be reduced in price, or that some of our manufacturing pursuits must be abandoned. Nor is this all that makes against us, for in the manufacture of cotton, especially, we shall very soon find rivals in the South. Cotton factories are already established in South and North Carolina, Georgia, Tennessee and Alabama, and they are found profitable. The state of Georgia now numbers about forty of these establishments. These will soon be followed by woollen factories, and, although we have great advantages in more abundant capital, greater mechanical skill and larger experience, it is reasonable to suppose, that factories established where the raw materials are produced, where labor is cheap, and where the productions are to be consumed, will succeed in the end, especially, *since it has been found that an abundance of white laborers can be had in the slave states* who are willing to embark in these occupations, though they would scorn to do any sort of work which is the common employment of slaves. On the whole, therefore, it is reasonable to suppose that some occupations which have heretofore been profitable with us will have to be abandoned, while nothing but superior skill, untiring industry, and close attention to the fancies and the fashions of the day, will enable us to maintain a successful competition in others.

Our statistics are by no means perfect, and it is to be hoped that the next taking of them will show a decided improvement. It is an object to ascertain the amount of capital invested, but it has not been ascertained yet by the United States, or by the State. In many cases the amount set down, evidently covers only the cost or value of buildings, while in others it includes also the capital actually employed in the manufacture. The answers should be confined to one or the other. In the very large and important manufacture of boots and shoes, if we rely on the returns made, no capital at all is invested. Another improvement may be adopted which will be really useful, viz.: to ascertain the amount paid out for labor. We know the

number of hands employed, and we should like to know what they obtain. The true profit of all manufactures, is the employment of labor. Capital will find profitable investments always, in one thing or another, if not here, elsewhere, and it is a matter of little consequence, whether it yields six per cent or ten per cent. ; but our interest in the reward of labor is deeper, for on the amount of that depends, in fact, whether on the whole we are prosperous or otherwise. If the 15,000 men and women employed in the factories of this county earn four and a half millions annually, it will do ; but if they are cut down to half that sum, the effect will be seriously felt, not in the value of property only, but in the education and the welfare of the whole people, and in all the relations of life.

AGRICULTURE OF NORFOLK COUNTY, IN 1845.

Towns.	Sheep.	Horses.	Cattle.	Swine.	Bushels Corn.	Wheat.	Rye.	Barley.	Oats.	Potatoes.	Pounds Butter.	Cheese.	Bushels Vegetables.	Value of Fruits.	Tons Hay.	Total Value.	REMARKS.	
Bellingham,	72	120	583	177	5,628	9	980	168	2,117	14,717	22,345	9,205	4,000	\$ 640	1,052	\$48,940	In the Aggregate Value of Productions,	
Brainerd,	28	201	488	249	1,859	.	10	60	.	9,749	12,837	2,650	4,787	2,645	1,223	32,370	" " Number of Horses,	
Brookline,	.	270	382	362	1,225	.	2,056	172	.	30,863	1,508	1,070	180,000	37,843	1,785	148,205	" " Number of Swine,	
Canton,	12	147	431	186	1,238	.	231	47	.	10,597	9,390	4,725	670	1,210	947	24,562	" " Bushels of Potatoes,	
Cobasset,	403	85	450	78	2,382	.	325	250	.	7,332	14,923	6,130	1,600	1,632	850	20,211	" " Tons of Hay,	
Dedham,	9	398	1,264	473	4,845	.	575	404	17	27,586	11,130	3,573	5,000	2,853	2,730	54,944	Roxbury stands First;	
Dorchester,	29	601	680	838	2,797	.	529	213	.	18,453	600	3,573	15,910	10,000	2,621	56,830	Dedham stands First;	
Dover,	.	99	386	216	2,402	.	278	272	766	8,005	8,100	3,500	500	970	761	17,177	In the Number of Cattle;	
Forbore',	18	150	434	235	3,963	24	303	60	392	15,072	16,918	5,710	407	755	856	26,441	In the Number of Sheep;	
Franklin,	71	188	748	412	6,753	15	1,180	347	3,003	30,664	20,183	7,270	1,422	1,595	1,625	46,188	In Bushels of Indian Corn, and Quantity of Butter,	
Medfield,	.	148	473	271	5,000	.	521	295	845	9,500	11,720	4,230	130	1,316	1,000	21,169	Wrentham stands First;	
Medway,	64	217	875	415	7,633	86	1,157	256	3,989	19,021	30,922	11,110	914	1,316	1,352	59,037	In Bushels of Rye, Quantity of Root,	
Milton,	9	276	643	364	1,818	.	300	200	.	15,400	2,000	5,075	6,928	5,386	1,698	19,172	and Value of Fruit;	
Needham,	310	204	693	169	5,500	.	717	172	323	21,315	30,150	.	1,400	1,000	1,450	45,675	Brookline stands First;	
Quincy,	2	397	723	650	3,360	.	469	360	.	13,632	12,632	7,311	2,364	2,236	1,565	34,490	In Bushels of Barley,	
Randolph,	.	263	457	554	1,215	.	63	6	.	13,632	12,632	7,311	11,000	10,222	988	38,546	Walpole stands First;	
Roxbury,	54	1,097	873	1,451	3,586	.	974	381	360	47,578	1,405	7,500	76,381	30,822	3,547	166,577	In Bushels of Oats,	
Sharon,	24	115	500	289	3,487	.	460	472	.	16,304	25,000	16,400	4,500	879	983	32,278	Medway stands First;	
Stoughton,	.	229	571	418	2,738	.	78	146	.	20,000	21,000	2,500	7,500	1,756	1,000	32,278	Quantity of Cheese,	
Walpole,	26	185	588	217	4,586	57	1,088	961	275	15,660	15,731	14,222	3,680	2,974	1,309	37,732	Number of Sheep,	
Weymouth,	65	286	574	548	2,515	.	136	100	.	20,000	15,731	14,222	3,680	2,974	1,309	37,732	" " of Horses,	
Wrentham,	272	321	1,079	646	10,859	.	1,810	189	2,523	33,274	32,242	14,170	.	1,594	2,363	58,705	" " of Cattle,	
																	of Swine,	
Some of the foregoing in 1840,	1,444	5,887	13,796	9,287	85,569	191	14,240	5,520	14,600	386,924	316,269	126,101	.	\$180,748	33,809	1,055,626	Bushels of Corn,	
	2,297	6,333	15,110	12,411	99,123	3,241	19,866	18,902	17,063	425,961	36,476	.	.	Bushels of Rye,
Decrease, .	853	446	1,316	3,124	13,564	3,160	5,636	13,382	2,463	29,037	2,667	.	.	Bushels of Potatoes,
	40 per ct.	1 per ct.	9 per ct.	25 per ct.	34 per ct.	64 per ct.	70 per ct.	15 per ct.	1 per ct.	1 per ct.	1 per ct.	.	.	Bushels of Barley,
											Quantity of Fruit,
											Tons of Hay,

MANUFACTURES OF NORFOLK COUNTY, IN 1845.

NORFOLK SOCIETY.

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Towns.	Popu- lation 1840.	Cotton.	Wool.	Leather.	Boots and Shoes.	Straw.	Paper.	Stone, &c.	Iron.	Copper.	Hemp.	Lead.	Furni- ture.	Chem- icals.	All other.	Total.	Capital Invested.	Males Em- ployed.	Fe- males.	Fish- ries.	Agriculture and Fur- est.
Bellingham.	1,065	33,640	10,000		48,862	2,100	20,000	27,000	41,000						2,900	97,592	60,900	146	108		48,940
Braine.	2,168	11,268	7,200	6,450	196,280										33,484	342,682	57,550	564	217		32,370
Brookline.	1,365		1,200	17,300	3,500								300		4,825	26,825	28,400	26			143,506
Causton.	1,985	48,200	21,400		2,745	100		1,100	78,000	160,000					52,300	353,845	115,300	197	72		24,562
Cobasset.	1,471				18,600			1,500							8,000	28,100	11,000	495	15	54,443	20,211
Dedham.	3,290	64,935	250,000	48,460	28,285	938	38,000	3,500	16,747				51,671		71,634	670,660	205,900	283	240		64,944
Dorchester.	4,875	100,940		55,540	12,780		60,000				3,742		85,300	24,000	63,232	408,674	339,250	457	115		66,830
Dover.	580				5,725				165,800						5,000	175,225	40,500	54	10		17,177
Foxboro'.	1,298	11,000	21,000	11,000	483	380,929			26,000						25,737	416,149	74,350	168	1,361		26,441
Franklin.	1,717	54,510		4,200	1,700	180,110			2,500				1,200		12,290	199,510	46,400	92	1,104		46,188
Medfield.	883				700	3,800			2,500				1,400		12,500	24,500	6,800	22	127		21,169
Medway.	2,043	222,405	10,650		48,296	55,742		600	880	22,000			22,500		21,960	383,892	116,700	191	362		59,037
Milton.	1,822			8,675	1,988			79,000	10,550						6,503	148,653	56,940	240			19,172
Needham.	1,488	34,800	2,000		29,400		30,000	396,500					2,500		11,950	233,534	80,000	164	45		45,675
Quincy.	3,466			67,125	133,573		144,634		400				2,000		33,236	562,634	20,700	833	98	7,625	34,490
Randolph.	3,213		190,975	287,000	700,100	80		2,000							5,990	710,550	2,250	889	649		38,546
Roxbury.	9,089		88,692		88,692		14,500	47,300	411,100	2,000	394,000	76,500	56,000	90,000	605,722	2,262,689	1,095,000	1,637	159		166,377
Sharon.	1,076	22,940	12,520		33,250	5,320			300						2,070	622,701	8,000	105	150		27,219
Stoughton.	2,142			418,274					2,300												
Walpole.	1,491	57,310	51,932		17,025	60,000	35,635		21,500		3,700		3,000		23,765	254,917	129,500	206	517		32,578
Weymouth.	3,758	39,160	44,186	10,600	567,122			4,000	280,000				11,400		14,000	368,122	88,200	1,563	633		38,531
Wrentham.	2,915				10,011	70,951									6,006	182,664	51,100	147	548		86,706
	58,140	680,908	628,018	516,140	2,287,010	650,097	342,968	482,500	1,067,747	174,000	401,442	76,800	240,271	114,000	1,022,784	8,748,401	2,634,760	8,867	6,621		68,068
																					1,056,680

PLYMOUTH COUNTY AGRICULTURAL SOCIETY.

On Wednesday, 3d October last, the Plymouth County Agricultural Society held their annual show, at Bridgewater. The address before the society, was delivered by Increase S. Smith, Esq., of Dorchester.

ON IMPROVEMENTS.

Many practical farmers take, as their surest guides in new processes, the results of experiments. This is well, when it leads to no wrong views of the importance and uses of theory. The confinement of attention exclusively to practices established by custom, would place an effectual obstacle to the progress of improvement. With a numerous class of farmers, there is danger of falling into these confined views, and consequently, neglect in the employment of necessary means of advancement. The deductions of scientific research do sometimes disappoint, in their application to practice. It must be so, because some of the laws of vegetable life are beyond human reach; and hence the foundation of the cautions so often given, not to practice extensively on any theory, till its correctness has been proved in experience. If science will not, at once and with certainty, teach what to do,—if the lessons of it must be subjected to the test of experience,—the conclusion is easily formed, that it is of little or no importance in the art of agriculture; that we may as well proceed without its lessons, as labor in the attainment of them. These conclusions would not be less unjust, than denunciations of theory in other occupations. Take, for illustration, the medical art: let the physician practice exclusively on theory, without any regard to the results

of experience, and he would be very certain to kill the largest half of his patients. We do not, on this account, think science of little or no importance to the physician ; we should esteem it the height of imprudence, to commit the management of the body under disease, to a man, who, rejecting all teachings of science, should ground all his prescriptions exclusively on personal experience of the character and progress of disease.

All theories in the art of agriculture, have been formed from observation and experience. The application of them in practice, will be greatly affected by those numerous changes which are taking place, in the composition of soils, and the variations in seasons. What is the best practice, in a particular location and climate, science alone cannot show us ; and without its aids, experiments would be little more than repetitions of processes, which altered circumstances should long since have rendered obsolete. Experiments, worthy of any imitation, and worth recording, must embrace philosophical principles. The experimenter may know nothing of system, but his attention, care, and study, have conducted him to conclusions strictly philosophical.

It is from carefully conducted experiments, we anticipate the most important results, in stimulating inquiry, and giving such new directions to labor, as may conduce to general prosperity. We propose subjects for experiments, which every farmer, in a measure, understands already ; but hope all who engage in the processes, will avail themselves of every attainable assistance, in extending their knowledge, that, with clearer and more comprehensive views, they may labor more efficiently, and realize greater gains. We wish to place motives before them, to seek new light, and unite, as opportunities are presented, science with practice.

Several years since, we offered premiums, for experiments to determine the best time to apply manure to mowing fields. This would seem an easy experiment, and the result more certain than in many other cases. Two experimenters, however, came to different conclusions, and it was judged advisable to renew the offers. Unfortunately, these offers have called forth no competition. There is but one applicant, Mr. George W.

Wood, of Middleborough, and he has failed of conducting the experiment, in all respects according to the rules given.

It does not appear, in his statement, that he weighed any beside the product of the land manured in May and August, till the present year. All should have been carefully weighed, the second year. The comparisons of that year, would have been quite as important as those of the present. The object of the requisition to weigh this year, was to ascertain the ultimate influence of the applications, in different months. It appears, that one-eighth of the acre selected, was lower and moister land than the residue. This circumstance would manifestly make the comparison unjust, and give the moist plat a greater or less yield, according to the character of the season. Owing to the neglect of weighing the products of the several plats, the second year, we have no means of full comparisons, excepting between the months of May and August. The applicant states, that the plat dressed in August, was moister land than that dressed in May; therefore favored by the character of the past season. Notwithstanding this circumstance, the aggregate amount of hay, produced on the land dressed in May, was ninety-three pounds more than that dressed in August. We have supposed that spring dressing would generally produce the greatest amount of grass; but it is not a convenient season, either for the preparation or the application of manure to mowing fields. The general practice will probably be, to dress mowing grounds the last of summer, and in the autumnal months. According to the experiment now before us, it would seem, that some preference should be given to the month of August; but the influence will be nearly as great in any of the fall months, and farmers may consult their convenience, if they will be true to their interest, and supply an abundance of manure in some of the months. The committee think, in plain and easy processes there should be strict compliance with rules. In view of Mr. Wood's omissions, the award of the premium is withheld, and a gratuity recommended, of six dollars.

A carefully conducted experiment has been made by Horace Collamore, of Pembroke, in the application of salt; the result of which, shows no influence to encourage, to much extent, the

use of the article as a fertilizer. In an experiment, several years ago, by Mr. Alden, of East Bridgewater, the results were something more favorable; but there was not enough efficacy manifested in that instance, to justify any thing like a general use of salt, as manure. From observation, we think it highly beneficial, and a very enduring fertilizer, on some soils; and on some, that it produces no visible effect. Trials on a small scale, will best serve to show where it can be used with profit. In the orchard and nursery, it can always be used with benefit, as a preventive of insects; care being taken, not to have it come in contact with tender trees, as it would kill them much quicker than insects. In the culture of plants of marine origin, salt may be pretty freely used, and with great benefit. The applicant for the premium appears to have complied with all the conditions of the offer, and therefore ought to receive it, though little or no benefit accrue to the public. To Mr. Collamore is awarded ten dollars.

Five claims were entered, to the premiums offered for the most successful experiments in the cultivation of cranberries. One has been withdrawn, and another claimant deceased, before making any progress in his experiment. Paul Hathaway, of Middleborough, Luther Richards, of West Bridgewater, and Libbeus Smith, of Abington, have presented statements. In these we perceive, that the habits of the vines, and the soils most congenial to their growth and productiveness, are no more than very imperfectly understood by the applicants. And we suppose this is the case with farmers generally. We have been accustomed, till within a few years, to regard cranberry vines as intruders in our low meadows, and have studied the means of their extermination, rather than of their increase and fruitfulness. The cultivation of them is a new process, in which the operator can avail himself of comparatively little scientific research, and of only a very limited experience. To great extent, he must frame his own theory, and prove the correctness of it in his practice. The variety of soils will occasion widely different results of similar operations. Theories will be numerous, and all of them may seem well sustained by practical results, in certain localities. The general, and, as we suppose,

correct opinion, has been, that much water contributes to the vigor and fruitfulness of cranberry vines. Now it is contended, that these berries may be easily raised in any of our gardens. There may be an upland cranberry, that will flourish in almost any soil; but the common, found in low meadows, we think never does well, without the aid of much water. It may not be necessary, that water should often pass over the vines; if the roots reach it in plenty, the required nutriment will be imparted. Hence, we can have fine beds of cranberries on upland, where the springs come so near the surface, the roots can luxuriate in water. We think the soil on which Mr. Hathaway is experimenting, not moist enough for the health of the vines. Messrs. Smith and Richardson have selected more eligible situations. It is yet too early, to estimate the comparative merits of the experiments, by the amount of fruit produced. Judging, as we must, to some extent, by the care and correctness of the applicants, in detailing their several operations, we can have no hesitancy in recommending the award of the first premium, ten dollars, to L. Smith, and the second, of seven dollars, to L. Richards.

Should the trustees think proper to hold out continued encouragement to the culture of this fruit, it would be well to require each experiment made on a certain quantity of land. Operations on one or two rods of land, are not likely to produce results, which would justify a recommendation of similar operations on an extensive scale. Though at present possessed of very little knowledge on the subject, we cannot reasonably doubt the practicability of greatly improving this fruit, in quantity and quality, by cultivation. The growing demand for the article, at home and abroad, may justify continued and liberal encouragement.

MORRILL ALLEN,

For Committee on Improvements.

Libbeus Smith's Statement.

I commenced operations, for the culture of the cranberry, in the spring of 1846. As the premium was offered for the best

method of cultivating the cranberry, and not for the largest piece of ground appropriated, or the greatest quantity of fruit raised, I commenced on small patches of meadow, where no cranberry vines were ever known to grow.

On the first patch, I cut and removed the sods; and as this would diminish the richness of the soil, I spread on, as a substitute, a coat of rich, fine manure, and a coat of coarse sand, mixing it about five inches deep. I then cut up the vines with a shovel, about eight inches square,—being careful to pull out of the vines as much grass as possible,—and set them about two feet apart. The first two years, I was able to work among them with a hoe; after this, I was only able to pull the grass out with my hands, or mow the tops off, the vines had so run together. And I will here mention, that in mowing over vines, care must be taken not to cut the upright sprouts; for the vines run along close to the ground, like the strawberry, and at nearly every joint there is an upright sprout, and from these sprouts we must look for the fruit. This patch is about one rod square; the vines are very thrifty, and are covered thick with cranberries. They completely cover the ground, and bid fair to do well.

On the second patch, I cut off the sods, and set the vines in the same way; did not apply the sand and manure, and took care of them in the same way. The vines cover the ground, but it is evident that they are not so thrifty, nor the fruit so large, as on the first patch; thus proving, that sand and manure are great helps in cultivating the cranberry.

The third patch—I cut the vines and set them about two feet apart, among the grass, without cutting off the sods, as some have recommended. I have yearly mowed the tops of the grass; the vines run some among the grass and fog, but it is evident that it will be a long time before they will gain the ascendancy. This method, though the easiest at first, I shall abandon.

On the third patch, I set out what is called the bell, or upland cranberry, on about one square rod of low moist land. I procured my roots of Sullivan Bates, of Bellingham, from whom I have received much information on the subject. He

sent me one thousand roots, which were the upright sprouts, for three dollars. I set them in rows about two feet apart one way and six inches the other, on the 20th of May, 1847. But one sprout died, though they had been out of the ground ten days, and were set out so late. The same fall I got about one pint of fruit from them. The runners began to run, but in the spring of 1848 the frost hove them nearly out of the ground. I set them on another patch; they have nearly all lived and look well. What they will ultimately do I know not, it is only an experiment. Mr. Bates writes me that the fruit is much larger and of a richer flavor than the common cherry cranberry, and can be raised on low moist upland, where it is not too low to raise potatoes.

Besides cultivating the above patches, I have ploughed and harrowed about one-eighth of an acre, thinking to kill the grass in this way, but found it impossible as there was so small a portion of the time I could work on account of the water. I carted off the sods and set the vines in the same way as in the first patch, with the exception of the sand and manure. They look well and have run from hill to hill, although they were set out, a part of them as late as the first of June, 1848, and the rest in September following.

I have taken some pains to ascertain the different varieties of cranberries, I have found four, viz.: the bell, or upland cranberry; the common, or cherry cranberry; the Barberry cranberry, and the Tree cranberry. Of the Tree cranberry I know but little. I have gathered some information from a gentleman from the town of Livermore, Maine, who has seen the tree in that town in its natural state, loaded with fruit. I am led to think that it would not be profitable for us to cultivate it, except as a curiosity. I am of the opinion that the common cherry cranberry, which grows in our meadows, is the best that we can cultivate.

The barberry cranberry is not very plenty; it is sometimes found in low pasture land, resembles the barberry in shape, and has rather a bitter taste. It is said to be good for some medical purposes. The bell cranberry sometimes grows among the cherry cranberries, and the vines cannot be dis-

tinguishable from them. It is known only by the shape and size of the fruit ; they are often found near the shore of cranberry meadows, winding their way towards the upland.

It has been said that cranberry vines must be flowed in the spring, or the frost will kill the blossoms. This cannot be true, as they do not blossom until about the first of July. The fruit forms very quick, and in six weeks from the time they blossom, it is quite large. I have thought that cranberry vines were very tender, but it is not so. I have set them out in April, May, June, September, and October, and they nearly all did well. It is difficult to kill the cranberry vine, if it is set out right, and kept free from grasses, and the roots kept loose with sand and manure. It has been said that cranberries will grow best in poor land ; this is not true. The only reason why they sometimes grow better on poor land, is because the grasses do not crowd them out. They will bear as well as any other plant.

I have planted some seed, but the plants on their first appearance are so small they can hardly be seen ; it would be a long time before they would do much. I intend to continue the cultivation of the cranberry, and shall pursue the same method as on my first patch, and shall apply a much larger portion of sand and manure. I will only add, that I hope the attention of agricultural men in this county will be called to the subject. Should this be the case, the time would soon come when every family might be supplied, at a cheap rate, with this most excellent fruit for sauce and pastry.

EAST BRIDGEWATER, *Sept.* 10, 1849.

MILCH Cows.

The committee, Samuel W. Bates, Chairman, awarded to
 Henry H. Whitman, of West Bridgewater, 1st premium, \$7 00
 John E. Howard, of " 2d " 5 00

Henry H. Whitman's Statement.

The cow I offer for premium is of native breed, and was five years old last spring. She has been kept this summer on grass, and has not had any meal, for the very good reason, that she would not eat any. She gave, in ten days in June, three hundred and thirteen pounds of milk, which made fifteen pounds of butter; and in ten days in September, two hundred and fifty-six pounds of milk, which made twelve pounds of butter.

WEST BRIDGEWATER, *Sept.* 28, 1849.

John E. Howard's Statement.

The cow which I offer for premium was nine years old last spring. She is of my own raising, and is partly of North Devon, and partly of native blood. Her calf, a fine one, although not large, (the dam is not,) was sold to the butcher on the 5th of June last, being then four weeks old. The cow was kept through the winter and spring, upon such fodder as is usually employed here for the support of stock, during those periods; namely hay,—mostly meadow,—oat straw, and corn-fodder; having had no roots, grain or extra feed whatever, the past year, except as follows:—from the 29th May, to the 18th June, two quarts corn and cob-meal per day, and from the 4th to the 15th September, the same quantity of corn and cob-meal per day, and green corn-stalks with the other cattle.

In ten days, from the 6th to the 15th June, inclusive, she gave thirty-one gallons of milk, from which were made eighteen pounds of butter, being about one pound of butter to seven quarts of milk. And from the 2d to the 14th September, she gave twenty-five gallons of milk, from which were made twelve pounds and ten ounces of butter, being about one pound of butter to eight quarts of milk.

WEST BRIDGEWATER, *Sept.* 21, 1849.

PLOWING.

The whole number of teams entered for Ploughing, was twenty—nineteen appeared and ploughed.

The committee award the following premiums :—

To John J. Howard, of Bridgewater, he having held and drove Ruggles, Nourse & Mason's plough, 1st premium, - - - - -	\$11 00
Nathaniel Southworth, of Carver, Prouty & Mears's plough, 2d premium, - - - - -	9 00
Willard Wood, of Bridgewater, R. N. & M.'s plough, 3d premium, - - - - -	8 00
Ira Conant, of Bridgewater, he having held and drove R. N. & M.'s plough, 4th premium, - - - - -	8 00
Abram T. Low, of Bridgewater, he having held and drove, R. N. & M.'s plough, 5th premium, - - - - -	7 00
Van R. Swift, of Bridgewater, Prouty & Mears' plough, 6th premium, - - - - -	5 00
Horace Ames, of Bridgewater, he having held and drove R. N. & M.'s plough, 7th premium, - - - - -	5 00
Francis Copeland, of Bridgewater, R. N. & M.'s plough, 8th premium, - - - - -	3 00
Elisha G. Leach, of Bridgewater, he having held and drove Prouty & Mears's plough, 9th premium, - - - - -	3 00
Philander Wood, of Bridgewater, R. N. & M.'s plough, 10th premium, - - - - -	1 00

There was also a double plough presented for the observation of the committee. They saw it operate, and it did its work very fairly. The committee are very happy to see the spirit of improvement manifested; but the machine being a novel thing to them, they cannot so well judge of its merits.

VIRGIL AMES, *Chairman.*

DAIRY.

The committee would congratulate the society on the increased interest manifested in this county in the dairy; and

only regret that they had not more funds to distribute, though the sum placed at their disposal was liberal for such exhibitions as we have had in former years. There were twenty-seven entries of butter, and thirteen of cheese; and the committee feel warranted in the assertion, that there was not presented of either, any specimen that any member of the society would have rejected from his table. All had the appearance of having been made with care and skill, and was put up in good order, and with much neatness and taste.

There was awarded, among other premiums,

To Anna W. Wood, of Bridgewater, 1st premium, on	
butter, - - - - -	\$3 00
Hannah W. Bassett, of Bridgewater, 1st premium, on	
cheese, - - - - -	4 00

PHILO LEACH, *Chairman.*

Anna W. Wood's Statement.

I strain my milk in tin pans and set it in a cool room. Let it stand a sufficient time for the cream to rise, then skim and churn it in a stone churn. When it is well separated from the butter-milk, take it out and rinse it in cold water; then add a little more than one ounce of ground rock salt, mixed with a small quantity of pulverized white sugar, to a pound of butter. I then set it in a cool place until the next morning, when I work it over and make it into balls, and pack it in a stone pot closely covered.

Hannah W. Bassett's Statement.

When the milk comes from the cows at night—we have had four this season—I strain it in pans. The next morning I put the milk into a tin kettle, stirring in the cream and warm it to blood heat; then strain in my morning's milk and put in the rennet. Let it stand half an hour, in which time it has sufficiently come to cut the curd in the kettle, when I let it remain

a quarter of an hour longer. Then break the curd with my hand, after which I put a dish into the kettle of curd which causes it to settle ; after waiting another fifteen minutes, I dip my curd into the cheese basket, after dipping out enough whey to scald the curd. I cut the curd while it is in the basket, to facilitate its hardening,—on which I place a small weight,—when it is sufficiently hard to have the scalded whey poured on the curd, which is about twenty minutes, I cut up the curd and pour the whey upon it, when it remains until it has cooled to about blood heat ; then pour into the cheese basket and let it remain, cutting it occasionally until it is hard and cool, when it is put into the cellar. My cheese is what is called two curded, and the second day, after obtaining another curd in the same manner as above described, I chop my curd very fine, adding a small tea-cup full of fine salt to one peck of curd. Then it is put into the press, where it remains twenty-four hours, turning it twice during the time.

FRUITS AND VEGETABLES.

The committee say,—We have followed the example of our predecessors, in awarding something to the greater portion of contributors ; but we are of opinion, that it would be more useful to award hereafter, larger premiums to such as exhibit rare and approved fruit and vegetables, and not to each and every article that may be in common use. We would also, suggest, that the trustees offer special premiums for the production of any new and well ascertained valuable variety. It was on this principle, that the first premium of \$4, has been awarded to Ebenezer Gay, of Bridgewater, for twenty-five varieties of potatoes, raised from seed, the present year.

Supervisor's Report.

Farmers are generally aware, that the provision of an abundance, and a well chosen variety of food, is indispensable to

the health and thrift of their domestic animals. If they know that similar provision is equally important to the health and growth of those plants which nourish animals, they do not exercise the same provident care in the case. What unassisted soils produce, in very numerous instances, is gleaned off from year to year, till the fields are left a barren waste. In an economical and moral point of view, this is little less faulty than would be the confinement of a bullock, on a small area of land insufficient for his support, and the abandonment of him to starve when the herbage was consumed. The earth is indeed, rich in resources, for the supply of innumerable creatures; left in its natural state it will produce the just proportions of animal and vegetable life, and never deteriorate,—but when managed by men, when they choose to nurture only certain classes of animals, and cultivate only certain descriptions of plants for their support, then the law of compensation must be respected. For the desired plants, the appropriate food must be provided. Excellence in the art of agriculture, chiefly consists in the judicious selection and the seasonable application of that food. Early writers on the subject, correctly supposed, that in stirring and pulverizing soils, every kind of plant would find its required nutriment. But this theory could hold true, only so long as virgin soil lasted. Continued cropping, makes it necessary to restore to the soil, substances which are taken away with the plants we remove. In cultivation, there is something more of exhaustion to the soil than is taken away with the plants; our operations cause the winds and rains to carry many choice particles into new localities. And many of them where they must remain inactive till again removed and exposed to the more direct influences of the sun and atmosphere. In every region of early settled country, and on almost every farm, a treasure of rich deposit can be found, sometimes on the headlands, made by careless cultivators, and always in swamps, where the operations in nature have been conveying earthy and vegetable substances ever since the creation. To these sources, farmers should look chiefly for the supply of food for their plants. With diligence in the necessary labor, we believe enough will be found for a succession of generations, and none need send to

Africa for guano, except fanciful farmers. In what manner the rich deposits found can be the most usefully diffused over the farm, with what soils and in what proportions they should be at first incorporated, how long remain in the compost heap, before applied to fields, are questions which should call forth the habitual inquiries of farmers, and concerning which, their knowledge should be constantly increasing. The business of composting manure, one of the most important in which farmers engage, is reducible to no set of general and invariable rules, but must be governed in view of the materials employed, the texture of the soil where it is to be applied, and the kind of plants we wish to cultivate. There is, however, one rule, which, we think, ought to be invariably observed. The principal ingredient in the compost heap, should form a contrast to the quality of the soil on which it is to be spread. The observance of this rule will produce a gradual mixture of soils, which often proves highly beneficial without the addition of manure.

There is in this county, very general neglect of one highly useful article in the compost heap, green vegetable matter. This contains all that is necessary to the reproduction of plants. An abundance of it is every year, decaying on the borders of fields, and in swamps, where the growth is not considered worth saving as food for animals. We do not recollect, that in any statement, mention has been made of the conversion of a large quantity of green, vegetable matter into manure before the present year.

The applicant for the premium this year, formed one heap, with the view of dissolving in it, green plants to a considerable extent. The dry season, and the pressure of other business, prevented the collection of the materials in so green a state as would have been desirable. The appearance of the heap, however, in October, indicated, that after one shoveling over, it would be in fair condition for application. This applicant has varied his operation something more than has been usual, but has made in all, a less number of loads than every farmer who owns fifty acres of land, should annually apply to his fields. The committee are induced to recommend the

award of the premium, not so much for the merit of the applicant's exertions, as with a view to the encouragement of farmers, in more earnest engagement in the important business of providing food for their plants.

To George W. Wood, of Middleborough, \$10 is awarded for composting manure.

The committee on produce have been presented with few claims on what are termed summer grains. George W. Wood is entitled to the first premium on oats, having raised a fraction over sixty-five bushels on an acre, \$8.

Daniel Alden to the second, a fraction over sixty-four bushels, \$6.

For the greatest crop of Indian corn on a single acre there are five claims. The season was remarkably favorable for this crop, and the measurement exceeded that of former years. But we suppose, in every instance, a deduction of from five to ten per cent. should be made from the reported quantity, on account of the state of the corn, which was harvested immediately after a rain that had visibly affected the cob, and considerably increased its weight. When the proposed deduction is made, which we think quite enough, the crops will exceed those of last year.

The editor of the Ploughman may again discover occasion to doubt the accuracy of our measurement. But if he should propose a different method, we hope it will be a practicable one: taking a certain number of hills instead of a square rod, as he proposed last year, is impracticable; because, where the largest crops of corn are found, it is seldom planted in hills; usually in drills, without the uniformity that would give precisely the same number of plants in each row. We know not how we can be more accurate, in the measurement of the corn crops, than we now are, unless we should require the whole crib to be cured and measured in the winter, in which case it is manifest there would be ample foundation of conjecture that the owner might have added something from another field. We have made very great improvements in the culture of this grain in Plymouth county; let those who have criticised our reports so severely, make themselves fair experiments, to ascertain the

amount that can be produced on a single acre, and we are confident they will be as much astonished at the results, as they have been at the quantities reported.

The first premium on corn is awarded to Nathan Whitman, of East Bridgewater, who raised, according to the measurement, a fraction over 141 bushels on an acre, \$8.

The second, to George W. Wood, a fraction over 115 bushels, \$6.

A gratuity of \$6 is recommended to be paid Orsamus Littlejohn, who raised over 114 bushels on a comparatively poor soil.

To Paul Hathaway, the premium for the best three acres of corn, \$15.

This field was a swamp, on which corn would not prosper, probably oftener than once in ten or fifteen years. The last season happened to be peculiarly favorable, and Mr. Hathaway obtained at the rate of 114 bushels to the acre; this result entitles him to the premium; but we feel bound to caution all farmers against planting corn in swamps; it is too hazardous an experiment.

To Leonard Hill, \$10, for the best two acres of corn; he had at the rate of 126 bushels to the acre.

A gratuity of \$8 is recommended to be paid to Daniel Alden, for a partial experiment to determine at what distances the hills or drills of Indian corn should be placed to insure the greatest crop. Mr. Alden made the experiment according to the directions given, on half an acre planted in hills, three feet apart each way, and on half an acre, planted in drills, the rows three feet apart, and the kernels nine inches apart, in the rows. One other half acre in hills was planted correctly, but the half acre with which it should have been compared, was not.

The half acre, planted in drills, gave eleven and a half bushels more corn than that planted in hills. Mr. Alden makes the expense of cultivating the drills only seventy-four cents more than the other. We should have expected a greater difference in the expense of cultivation, but if it were quadrupled, there would be a manifest advantage in planting in drills. We think an experiment of this kind of sufficient importance to be carried

through accurately, and hope the trustees will continue the offers.

A gratuity of \$4 is recommended to be paid O. Littlejohn for seventy bushels of carrots, on a quarter of an acre.

The premium of \$3 to George Drew for 154 bushels turnips, on a quarter of an acre.

The premium of \$6 to George W. Wood for 218 bushels do., on half an acre.

The premium of \$6 to George Drew for ten bushels three pecks of white beans, on 80 2-3 rods of land.

To Daniel Alden for a quarter of an acre of beets, 94 bushels, \$5.

In closing this report, the last I shall ever have the honor of making to this board, it is not deemed improper to express my grateful acknowledgments for the courtesy and kindness of the committee with whom I have acted, and the confidence reposed in the opinions given them. Nor can I, without great injustice to my feelings, leave the pleasant service, which engaged my attention seven years, and saved me from many despondent hours, without expressions of thanks to the trustees, for the candor with which the service has been regarded, and for their forbearance with the weaknessess of age, to the present hour.

The painful emotions experienced in ceasing participation in business with enlightened, affectionate, and liberal friends, could not be easily described, and will not be attempted. If counsel were taken of my feelings of attachment to those with whom I have acted, and the cause in which they are engaged, there certainly would be some disposition to tax the patience of friends yet longer. But the darkening of those that look out at the windows, the continual failing of memory, and the faltering of the voice, forcibly admonish me that the time has arrived, when responsible duties should be resigned to more active and vigorous minds.

The interest felt in the prosperity of the society can cease only with life. My strong desire that your future labors may be attended with distinguished success, prompts a caution against concentrating efforts in a few specific and favorite

objects ; let every branch of the farmer's interests attract attention, and, in a just measure, be taken under your patronage. Endeavor to walk in a light of science, but prize cheaply theories not reducible to practice. In the numerous speculations on various agricultural topics, which abound at the present time, we are in danger, without the exercise of great caution, of being led into errors. Speculative minds, in the ardor of inquiry, often forget that in practical life, facts should always take precedence of theories. Use with vigilant care the varied means of scientific improvement now enjoyed, and practical improvement will be proportionably accelerated.

Thirty years of associated labors have produced great good in the county ; let vigorous and enlightened minds in future be energetically employed, and the next thirty years will exhibit a near approach to perfection in cultivation.

Encouragements to excellence in this work, are direct means of promoting the pecuniary interests of every class of citizens, and indirect means of producing refinement in social feelings, of renovating moral sentiments, and advancing the cause of pure religion.

Respectfully submitted,

MORRILL ALLEN.

George W. Wood's Statement.

I have made and applied the present year, and carted out, and piled, to be used next spring, two hundred and seventy-eight loads of compost manure, of forty cubic feet each. I have also as much as fifty loads still to get out, that is ready for use. I have made my manure as follows:—In the fall of 1848, cleared all my yard of manure, then drew in muck, soil, rushes, brakes, old hay, potato tops, &c., into my yards, and around my barns, kept my cattle yarded in the foddering months, fed out my poor fodder in the yards, yarded my stock, nights in summer, ploughed it over, and harrowed at various times since August. Made from green manure, from barn and muck soil composted, seventy-one loads; in August, made a compost heap of thirty-five loads, made of fresh grass, rushes,

breaks, weeds, and any green stuff I could get, piled as follows:—first, a laying of muck, then a coat of grass, &c., that made it five inches thick when pressed together; and continued on, —a layer first of one, then the other, till I had used up my grass, &c., covered all over well with muck, soil, &c., put in two casks of lime, and about fifty bushels of ashes, leached and unleached, and some rich scrapings from around my buildings. As I put up the heap, I wet well from a water hole near my barn; I have shovelled it over once; it has rotted well. I have also made a pile of twenty-five loads of muck, mixed with one hundred and twelve bushels of ashes, put up in the same manner as the above pile, with the omission of water. I have made three other piles, making fifteen loads of rich soil around my barn,—weeds, grass, &c., very good manure for a top-dressing; the remainder I made in my yards, with my cattle, sheep, hogs, &c. The muck I used, was dug and piled in 1848. I have this year carted out and piled as much as two hundred and fifty loads of muck, for use the next season.

MIDDLEBOROUGH, Oct. 27, 1849.

Nathan Whitman's Statement.

The land on which I raised my corn was green sward. After spreading on the sward thirty loads of good manure, I ploughed it with three cattle, six to seven inches deep; then furrowed it without disturbing the sod; then I put into the furrow twelve loads of compost manure, dropping at from fifteen to twenty inches apart, and dropped the kernels in each hill, the rows being three feet six inches the other way. This was ploughed and planted from the 25th to the 28th of May. The 1st of July I went through with the cultivator twice in one row, in the heat of the day so as to destroy the weeds; then I hoed it without raising any hill, one day and a half labor. After haying in August, went through and pulled up the weeds; did not cut my top stalks. The result,—your supervisor committee harvested $66\frac{1}{2}$ lbs. on one rod, making $141\frac{9}{16}$ bushel on the acre. The seed corn was smutty white.

EAST BRIDGEWATER, Oct. 1849.

Orsamus Littlejohn's Statement.

The acre of land entered by me for the best crop of corn is sandy and gravelly, not rich by any means. May 8th, it was ploughed about seven inches deep; 15th and 16th, thirty-one loads of compost, mostly mud, were spread on top the furrow and well harrowed and bushed in; 17th, planted $3\frac{1}{2}$ feet apart each way. Seed soaked six hours in strong chloride of lime, six corns in the hill, six inches apart. About a quart of good fine compost spread over each hill and covered about one inch deep; seed a mixture of white, was selected sometime before harvest. Had regard to three things,—first, ripeness; second, large ear and small stalk; third, ears close to the ground. It has been cultivated and hoed three times; cultivating one week and hoeing the next, and so on in the driest weather. The ploughing cost \$2; manure \$4 50; spreading, &c., \$3; planting, \$2 67; seed, 38 cts.; hoeing, \$3 91. Total \$16 46.

MIDDLEBOROUGH, Oct. 10, 1849.

Paul Hathaway's Statement.

The land that I entered for premium for the best three acres of corn, is a drained swamp. Two acres were to corn last year, manured with twenty-seven loads of good compost manure to the acre. One acre and a half was grass land ploughed in November last. In May, carted thirty ox loads of compost manure upon the acre and a half, and harrowed it in, being twenty loads to the acre. Commenced planting May 10th and finished May 20th. No manure upon the the two acres since May, 1848. The two acres that were to corn the last year, were ploughed once this spring, furrowed three feet each way and planted with five or six corns in the hill. I have put no manure in a hill of corn or potatoes this year. I prefer corn to stalks. The acre and a half furrowed three feet each way, and planted with five or six corns to the hill. At weeding time, harrowed twice in the row each way; thinned the corn to four stalks and hoed the same. Nothing done since, except remov-

ing a few weeds. The two acres were thinned and hoed twice, harrowed each time. Seed corn selected at harvest time. Expense of ploughing three acres, \$6; harrowing one acre, 50 cents; planting three acres, \$6; hoeing and thinning three acres, \$7; two acres hoed twice, \$3; carting and spreading manure, \$5. Total, \$27 50.

MIDDLEBOROUGH, Oct. 29, 1849.

Leonard Hill's Statement.

The land, on which my corn was raised, as to quality is good, and of a yellow loam. It has been mowed four years in succession, from which has been taken about one ton of English hay to the acre each year. In November, 1848, one acre was ploughed, the other was not ploughed until May, 1849. The whole lot contained two acres. It was harrowed twice, and then furrowed with a light plough, making a wider furrow by running it twice through for each row, three feet six inches apart. There were eight cords of good compost manure put into the furrows, and spread evenly over the space opened with the plough. I then dropped of the white eight rowed corn, (sometimes called smutty white,) selected from the best stalks, four kernels, about two feet apart in the rows, as before described, on the manure, then covered with a hoe. The planting was done from 10th to 14th May, first hoeing June 10th to 12th. I ploughed with a light plough, turning the earth from the corn into a ridge between the rows, then hoed; second time hoed without ploughing. June 23d, third and last time it was ploughed one furrow between each row, split the ridge made by the first ploughing, then hoed leaving the ground nearly level. This done 5th July; about 10th September topped stalks.

Expenses—first ploughing, \$8; harrowing and furrowing, \$3 75; hauling manure and planting, \$9 25; first ploughing and hoeing, \$5 75; second hoeing, \$3 50; third ploughing and hoeing, \$6 25; topping stalks, \$3 75. Total, \$40 25.

EAST BRIDGEWATER, Oct. 13, 1849.

BRISTOL COUNTY AGRICULTURAL SOCIETY.

THE twenty-sixth annual exhibition of this society was held at Taunton, on Thursday, the 11th day of October last. A severe rain storm on the morning of the day of the exhibition, and the afternoon and evening of the previous day, had a tendency to lessen in a very great degree the extent and beauty of the show, for which ample and excellent provision had been made. Notwithstanding the severity of the storm in the early part of the day, very large numbers were in attendance from every part of the county. The exhibition was one of quite unusual and extraordinary interest, and attracted more attention than perhaps any former anniversary of the society, since its formation in 1823.

The annual address before the society, was delivered by the Hon. Marshall P. Wilder, of Dorchester.

At the dinner table, remarks were made by several gentlemen, both invited guests and members of the society. The President, Hon. Johnson Gardner, made some brief suggestions respecting new modes of agricultural action, with a view of extending the influence of local societies. "We have reason to be proud," said Mr. Gardner, "not only of the good effects of this association as seen and manifested here, but of the results of this society throughout the whole county of Bristol. We see its effects, and the results it has contributed to produce, in every one of the towns and in all of the school districts, in the reclaiming of bog meadows, in the planting of orchards, in the increased production of hay, grass and corn; in the fact that fifty or sixty bushels are now raised to the acre where were formerly but fifteen or twenty, and which was then considered an extraordinary crop. We see the effects, too, of this and the other societies, in the almost universal attention now given to the subject of agriculture.

But much remains to be accomplished,—much that as yet

has scarcely been attempted. Greater improvements are at once demanded here, if we would aspire to keep pace with the other societies in the State. As a means of advancement, were I permitted to suggest, I would recommend that agricultural clubs or societies should be formed in the different towns in the county. They would, it is believed, tend alike to stimulate the great interest of agriculture, and to swell the ranks of this society. They would afford profit and amusement; in them the young and the old would assemble, and freely discuss the various subjects connected with their department of industry.

Much might also be done by still greater efforts to improve the stock of the county, and still more by the establishment of an agricultural library by this society, for the benefit of all its members. Such a library would be a public benefit. In it would be preserved the annual reports of the societies, the best works on agriculture, and the agricultural literature of the day, so that all the best authors on any given subject might be readily consulted by any one who should wish to avail himself of an opportunity. If established, it should be free to every member, and thus one of the important objects of the society would be accomplished, in the dissemination far and wide of agricultural knowledge."

By the acts of the royal commissioners of 1741, a part of the ancient county of Bristol, comprising the Gore, and the towns of Little Compton, Tiverton, Bristol, Barrington, and a part of Swansey, appropriately denominated, "the Garden of the old Colony," were unjustly separated from Massachusetts, and by the subsequent arbitrary decree of the king and council, annexed to Rhode Island, in 1746. But notwithstanding Bristol county was then despoiled of a part of her most valuable territory, she has made vast strides of improvement within the last hundred years. She has now within her limits one beautiful city,—New Bedford,—and eighteen flourishing towns. It is true that some of the soil in the interior is rather sandy and sterile, and that some of it, like that of New Hampshire, abounds in rocks; yet taken as a whole, it is luxuriant. For the beauty of her scenery, the salubrity of her atmosphere, the energy and

enterprise of her inhabitants, Bristol is probably unsurpassed by any other county in the Commonwealth.

In this county are fifty cotton manufactories, where are annually made more than 19,000,000 yards of cloth; four calico manufactories; three woollen mills: seven rolling, slitting and nail mills; three forges; fourteen furnaces for the manufacture of hollow ware, &c.; ten establishments for the manufacture of cotton, woollen and other machinery; five axe manufactories; one establishment for the manufacture of steam engines and boilers; two establishments for the manufacture of cutlery; five tack and brad manufactories; six manufactories of shovels and spades, forks and hoes; one establishment for the manufacture of Britannia ware; one plough manufactory; one copper manufactory; six brass founderies; one metal button manufactory; one glass manufactory; three paper manufactories; two clock manufactories; twelve establishments for the manufacture of chronometers, watches, gold and silver ware and jewelry; eighteen saddle, harness and trunk manufactories; one cordage manufactory; seventeen establishments for the manufacture of salt; thirty-eight establishments for manufacturing vehicles; two lead manufactories; eighteen establishments for the manufacture of oil and sperm candles; nine soap and candle manufactories; fourteen chair manufactories; two comb manufactories; one linseed oil mill; twenty-three furnaces, \$147,703 worth of straw bonnets and hats manufactured; \$5000 worth of segars; building stone quarried and prepared to the value of \$27,000; \$4,300 worth of marble quarried; wooden ware manufactured to the value of \$12,800; boxes to the value of \$14,835; and between three and four hundred vessels employed in the whale fishery.

According to the best information, there are in the county, 31 Saxony, 711 Merino, and 9,144 other kinds of sheep; 5 asses and mules; 5,350 horses; 15,285 neat stock; and there are annually produced about 140,000 bushels of corn; 16,000 bushels of rye; 1,700 bushels of barley; 47,000 bushels of oats; 430,000 bushels of potatoes; 77,000 bushels of esculent vegetables; 70 tons of millet; 25,000 tons of hay; 126,000

bushels of fruit ; 323,000 lbs. of butter ; 158,000 lbs. cheese ; 1,300 lbs. honey, and 153,000 gallons of milk.

Those portions of the county of Bristol, bordering on the Narragansett, Mount Hope, Acushnet and Buzzard's Bays, and the Providence, Taunton, and other rivers flowing into the same, are among the most productive. But other sections present many of the finest specimens of cultivation. On the whole, it may safely be stated that the agricultural products of the county of Bristol, compare well with other sections of the State. She produces about half as many tons of hay as each of the counties of Essex, Hampshire, Hampden, and Franklin ; almost as much as Norfolk or Plymouth ; more than half as much as Berkshire ; and more than Suffolk, Dukes and Nantucket together.

From these statistics, it will be perceived that a large share of the population and capital of our citizens, is employed in other pursuits than those of agriculture. But this all important interest is beginning to receive increased attention.

BREEDING STOCK.

The number of animals exhibited this year, is not so large as usual, owing, it is presumed, to the unfavorable state of the weather. The committee regard the character of breeding stock as of great consequence to the success of farmers in this county. Our soil is less fertile and productive in the usual crops raised here, than that of most other counties in the State, and therefore, the qualities of our stock of domestic animals, are of more importance to our success in farming pursuits.

The committee are gratified to find, that more attention is given to this subject now than heretofore, and that our agriculturists are beginning to appreciate the value of an improved breeding stock to their pecuniary interests. By a general law of nature, good qualities are transmitted from the parents to the progeny. This principle has been long acknowledged and relied on in the vegetable kingdom. The observant husbandman, guided by experience, always aims to select the best seed

for re-production. The largest, earliest, and most perfect ears of corn, are always selected for planting ; and the best grain is saved for sowing. The healthiest stocks and the best kinds of fruit, for the orchard and the garden, are sought for by the horticulturist. Why should not the same principle be applied in the selection of stock for the stall, the draught, or the dairy ? It is often said, that it costs no more to keep a good cow than a poor one. If the farmer will reflect, that the best cow will give two or three times as much milk as an ordinary one, and that there may be as great a difference in the *quality*, as in the quantity, the importance of a good selection is at once evident.

The greatest care and attention are given in some parts of Europe, to the selection of breeds of cattle, and great labor and expense are bestowed in improving them. No one can read the agricultural journals of Great Britain, and the reports of those who have recently visited that country, without observing this fact.

Great praise is due to the State society, for the importations which they have recently made, at great expense, of some of the best breeding stock in Great Britain, for the purpose of improving our breeds of cattle, and for the liberality which has been shown, in distributing specimens throughout the State. It is hoped, that the farmers of Massachusetts will be able to derive great benefit from this valuable stock of animals.

The committee have awarded the following premiums :—

For the best bull,	to G. W. Morey,	-	-	\$12 00
" 2d " "	" B. F. Dean,	-	-	10 00
" the best cow,	" Horatio Field,	-	-	10 00
" 2d " "	" Simeon Presbrey,	-	-	8 00
" the best heifer,	" Johnson Gardner,	-	-	5 00
" 2d " "	" Hiram Copeland,	-	-	3 00

J. DAGGETT, *Chairman.*

Horatio Field's Statement.

I offer for premium, one native cow, seven years old last spring. She calved April 7th, 1849. From one day's milk, in

May, three pounds of butter were made. Average of milk per day, in June, was twenty quarts, the weight of the same, $56\frac{3}{4}$ lbs. In ten days, in June, there were made from her milk, $32\frac{6}{8}$ lbs. of butter. Ten days, in September, there were made, $24\frac{2}{8}$ lbs. She was milked three times a day. Her daily feed, was four quarts of shorts, four quarts of oats and corn meal, ground together, and grass.

TAUNTON, *October 11th*, 1849.

Johnson Gardner's Statement.

I present for inspection, my cow "Experience," and two two-year-old heifers, "Antenna" and "Chess-board." The cow was raised by me, and is six years old. Her sire was the celebrated Durham bull, imported by Charles Talbot, of New York city. Her dam, a fine proportioned Galloway cow, (and all my others, except one, are a cross of that breed, with the Durham,) was an excellent milker. For a particular description of my stock, which I deem very superior, reference may be had to the Boston Advocate, of October 7th, 1843, and January 6th, 1844, and also to the Massachusetts Ploughman, of a later date.

The quantity of milk which this cow has given, during the months of June, July and August, has averaged about sixteen quarts per day. Her milk produces excellent butter, but I regret that the quantity is not known, as it has been manufactured with that of the other cows. She has had good pasture with my other stock, but nothing additional, except for a few days, during the driest part of the season, when all were soiled with green corn sown for the purpose. She is perfectly kind and quiet with regard to milking and fences, as her appearance indicates. She is expected to have a calf by the pure Devon bull, from the State society, on the 1st of April next.

"Antenna," the heifer with horns—and why she has horns I cannot tell—is one of her calves. The sire was a half-blood Durham, for which, the society awarded a premium, in 1846. "Chess-board," the heifer without horns, was sired by the same

animal, and is from an excellent Galloway cow, still in my possession. They have had the same fare as the cows and their other associates.

VUE DEL'EAU, *October 10th, 1849.*

ON PLOUGHING.

The committee are unwilling to commence their report, without first making an effort to impress upon the minds of members of the society, that our object in coming together at this time, and at all our meetings, is, to call into action our latent energies, to excite us to greater industry, and to wake up in our minds, a spirit of inquiry into the best mode of doing the most labor, and doing it in the best manner, with the least or smallest means. The importance and utility of ploughing matches may be, and have been questioned by some persons ; but as they are generally considered the most exciting and interesting part of the show, very few are found to discourage them, and no one who has made himself well and thoroughly acquainted with the subject, will speak lightly of them.

All persons who are much advanced in life, can well remember when no one thought of ploughing sward ground, without four good oxen ; and it was then often deemed necessary, to add a horse. A team of this size would always require, at least, one experienced driver, and often a boy in addition, to lead or ride the horse. But now, the work is better done—as we have this day had abundant evidence—with one yoke of oxen and one hand. And this state of things has, in a great measure, been brought about by ploughing matches, which have led directly to the better training of cattle ; and the general emulation excited by them, has also led to great improvements in ploughs, as well as in the use of them.

Agriculturists should never forget, that the finest and impalpable parts of the soil, is the principal, if not the only actual portion in the vegetable growth ; hence the necessity and importance of a thorough pulverizing of the soil, and I believe

that the modern plough inverts the ground as well, if not better than any other instrument whatever.

The depth of ploughing, is a subject about which men differ in opinion ; and this depends much, as the committee think, upon the character and depth of the arable soil. But I suppose all will agree, that when the soil is loosened deep, it will cause the crops to be better guarded against drought, and also against a superabundance of rain. Honor is generally given to the victors in the conflict of war. But I have often thought of the vast difference to the world, between victories obtained upon the battle-field, and those obtained upon the ploughing field,—the one sending weeping, distress and death, while the other blesses the race with plenty, happiness, joy and life. If mother earth yielded her productions spontaneously, to the inhabitants of the garden of Eden, she is not so indulgent now, for she must needs be continually stirred and vexed by the plough and the hand of cultivation, or her children will want.

The competitors have contended earnestly to-day, but fairly, manfully and peaceably, for the prize ; bringing vividly to mind that passage of sacred writ, which predicts that “swords shall be beat into ploughshares.” The committee suggest, that lands somewhat unsubdued, should always be selected for trial, otherwise, it would be only to see who could do an easy thing best, and the lands this day selected, were tolerably well suited to the purpose. The committee admit, that the ploughmen at this match, have displayed great skill in their work, which has been finely done, and many of the lots so nearly alike, that it has baffled the skill of the committee to decide, which was best, but they will do themselves the justice to say, they have mixed no favoritism with their awards.

The committee, a part of which, have been members of the society from its commencement, have never witnessed but one day of their exhibition, so stormy and unpropitious, as was the morning of the present day ; yet they were gratified to perceive, that the yeomanry of Bristol county were not deterred from duty, but appeared, and did excellent service on the field. The whole number of teams entered, was twenty-four, sixteen of which, were of one yoke of oxen, four, of horses, and four,

of one yoke of steers and a horse—seventeen of which appeared on the ground, notwithstanding the severity of the storm, and performed the work.

The committee, after careful examination of the work, have awarded premiums as follows, viz. :—

To Ox Teams, without a Driver.

To John B. Newcomb, of Norton, 1st premium,	.	\$6 00
“ John A. Hall, of Raynham, 2d do.	.	5 00
“ Henry Southworth, of Taunton, 3d do.	.	4 00
“ Jacob Shepard, of Norton, 4th do.	.	3 00
“ Darwin Deane, of Mansfield, 5th do.	.	2 00

To Horse Teams.

To Jona. K. Fairbanks, of Taunton, 1st premium,	.	\$4 00
“ Josiah Woodward, of Norton, 2d do.	.	3 00
“ Ezra P. Woodward, of Taunton, 3d do.	.	2 00

To Horse and Steer Teams.

To Eben. Paddelford, of Taunton, 1st premium,	.	\$4 00
“ Luther L. Short, “ 2d do.	.	3 00
“ Eli K. Washburn, of Raynham, 3d do.	.	2 00

CROMWELL LEONARD, *Chairman.*

HONEY.

There were four lots of honey exhibited, some of which were exceedingly fine. We award

To Simeon Green, of Mansfield, 1st premium,	.	\$6 00
“ Barnum Hall, of Raynham, 2d do	.	3 00

Mr. Green's statement, as to the management of his bees, is interesting and instructive; and it is hoped, all in the county, who feel interested in the management of bees, will avail themselves of his experience.

A. H. HALL, *Chairman.*

Simeon Green's Statement.

I joined the Bristol County Agricultural Society, the year after it was formed. Since then, I have brought, almost every year, something to its shows; more to aid in keeping up the society, than for the profit of a premium. I have written more concerning bees, and the management of them, than all other competitors. What little knowledge I have acquired, in forty year's experience, I have been liberal in making known to others.

If I rightly understand, it is the intention of the society to award their premiums to those who obtain the most and best honey, in the cheapest way possible. The poor man does not wish to go to Boston, for a glass hive, when a wooden one will do better. Profit before fancy. For my own part, I am convinced by experience, that wooden boxes, or hives, are those that bees like the best. I have three kinds of patent hives, that are all constructed on the same principle. In a part of them the draw-boxes are faced with glass; in the others, they are all of wood, such as I offer for your inspection to-day. I had nineteen similar wooden boxes, filled with honey; while, on the other hand, as many glass ones were all imperfectly filled. When two of these boxes are taken from one hive, (leaving, in the mother hive, a supply for winter,) and are sold for \$2 50, I consider it a good interest on the investment.

I enter two hundred and eleven pounds of honey, almost all of which was taken without killing a single bee. I kill no bees, except they are likely to perish by the bee moth.

MANSFIELD, *October 9, 1849.*

ORNAMENTAL TREES.

The committee, (JOHN A. HALL, *Chairman*,) award to Samuel A. Dean, of Taunton, the first premium, of ten dollars; he having set by the roadside, one hundred and three trees, which are in a thrifty condition.

Samuel A. Dean's Statement.

From the 1st to the 15th of April last, I obtained from the woods, one maple, fifteen ash, eighty-five elm, and twelve chestnut trees, (one hundred and three of which are in a thrifty state,) and had them set out by the roadside, on my farm, in the easterly part of this town. These trees were set in the following manner:—Large holes were dug, so as to give the roots plenty of room. When the trees were placed in the holes, fine dirt was sprinkled on, and well worked in among the roots, after which, water was poured around the tree. Unless the trees were very tall, their tops were left on; if top-heavy, the limbs were thinned out, until the tree would stand of itself.

My reason for not cutting off the tops, is because a healthy tree sends out rank shoots, which are liable to be split off by the wind; and the tree never grows so gracefully, afterwards.

The chestnut trees did not succeed well, as only two lived; but the elm and ash trees withstood the dry weather of the last season, much better than I expected.

TAUNTON, *March 11*, 1849.

FANCY ARTICLES.

The committee would particularly notice the car linings, exhibited by Messrs. George Holt & Co., of Taunton. This company, we understand, were the first to introduce the manufacture of this article into this country, and they have succeeded in bringing it to the highest perfection. It is as soft and pliable as cloth, and the beauty of the patterns, and brilliancy of the colors, can hardly be surpassed. Its advantages over cloth, for lining railroad cars, are very apparent. It is more durable, more easily cleaned, and less liable to be soiled; much handsomer, and, in the end, cheaper. We are glad to notice, that it is coming into general use, not only for this purpose, but for table mats, coverings for tables, pianos, bureaus, stair carpets, &c.

TIMOTHY GORDON, *Chairman.*

GRAIN CROPS.

The entries for premiums were three; one for corn, one for rye, and one for beans. The committee regret that our farmers are so remiss, from year to year, in not furnishing statements of the results of their crops. We believe that many of the farmers in this county, could present statements, especially of the cultivation of corn, that would not only set an example for others to follow, but would be highly beneficial to the agriculturist generally, by specifying the mode of cultivation, the kind of corn raised, the time of harvest, and the quantity obtained per acre, with other facts respecting the crop.

The committee are led to inquire into the cause of this remissness. Is it not owing, frequently, to the inexcusable neglect of farmers, in letting the time go by, by not commencing in season to take the required account of their crops, and to furnish the proper certificates, to be presented with their claim for premiums? The committee cannot refrain from referring to a case in point, which came under their own observation. A young farmer commenced, early last season, to prepare his ground for a crop of corn, with a full determination of obtaining the first premium. He labored long and hard, through the whole season, and obtained a crop worthy of notice in our annual transactions; but he could never find time to make out the requisite papers, to be presented for a premium. The committee allude to this case, as they believe that many of our farmers, who have raised large crops, have been left in the same dilemma. They have awarded

To Horatio Leonard, of Raynham, for the best crop of	
Indian corn,	\$10 00
To Simeon Green, of Mansfield, for the best crop of	
beans,	6 00
To Cassander Williams, of Taunton, for his crop of	
rye, a gratuity of	2 00

Mr. Williams did not produce proper certificates; the com-

mittee, therefore, did not feel justified in recommending that the society's premium be awarded to him.

JAMES C. STARKWEATHER, *Chairman.*

Horatio Leonard's Statement.

The following is a statement of the yield of corn, and the expenses of raising the same, on one acre of land, in the season of 1848 :—

Fifty-two bushels of corn, at seventy-five cents, . \$39 00

Expenses.

Ploughing, . . .	\$ 2 00
Sixteen cart-loads of manure, . . .	16 00
One man and three boys, one day	
each, in planting, . . .	2 50
Hoeing twice, . . .	4 00
Seed, . . .	25
	<hr/>
	\$24 25
Profit, . . .	<hr/>
	\$14 75

I consider that the top-stalks, and other corn fodder, amply repaid all other expenses. The land on which the corn was raised, was mowed the year previously, and one ton of hay was cut from the same.

RAYNHAM.

Simeon Green's Statement.

The land was green sward, and contained one-half an acre. It was considered ordinary ; ploughed in November, 1847. On the first day of June following, harrowed, and then furrowed out, three feet by two feet. The beans were planted June 7th, (a new bean with us, called N. H. Early Whites;) from five

to six beans were planted in a hill, and to each hill was applied one gill of wood ashes ; no other manure was used.

Yield, five bushels and twelve quarts; sold at \$1 75, \$9 08

Expenses.

Ploughing,	\$1 00	
Harrowing and furrowing,	63	
Planting, 75 ; harvesting, 75 ;	1 50	
Seed beans, six quarts,	33	
Eight bushels ashes, at ten cents,	80	
Thrashing and winnowing,	50	
		<hr/>
		\$4 76
Profit,		<hr/>
		\$4 32

MANSFIELD.

BARNSTABLE COUNTY AGRICULTURAL SOCIETY.

The sixth anniversary and fair of the society was held on Wednesday, October 17, 1849, at Barnstable. The weather was pleasant, and the crowd of people, and the number and variety of productions exhibited, proved an increased interest in the occasion. The show of cattle and horses was larger, and of a higher order, than on any former occasion. The ploughing match was well contested. The exhibition of vegetables, owing to the protracted drought the past summer, was not large. The show of fruit, although not extensive, was of good quality in the specimens presented, and it was said by competent judges, would compare favorably with any similar exhibition in the State.

The address was delivered by William Buckminster, Esquire, of Framingham.

FARMS, &c.

No entry has been made for the premiums offered for the most extensive, valuable, and economical improvements in the cultivation and management of an entire farm, and only one entry for improving wet meadows, or swamp land. Edward Thacher, of Yarmouth, having complied with the society's rules, the committee award to him the first premium of \$6.

An interesting statement was received from Obed Brooks, Jr., of Harwich, giving a detailed account of his successful management in reclaiming old fields, or worn-out lands. The committee have no authority to grant him a premium, but believing his suggestions valuable, they recommend that there be awarded to him a gratuity of \$4.

· AMOS OTIS, *Chairman*.

Obed Brooks, Jr's. Statement.

In all the towns in this county there may be seen tracts of land lying unfenced and unimproved, the surface of which is being blown off by the winds, and which are becoming barren, sandy, and unsightly.

Having had some experience in reclaiming such waste lands, I am under the impression that the farming community are not generally aware of the facility with which they can be rendered not only pleasant to the eye, but profitable to the cultivator.

It is well known that the soil of the Cape, even that which has the appearance of great sterility, is peculiarly adapted to the growth of Indian corn. With a slight dressing, by *proper cultivation*, it can be made to produce a good crop of corn the first year; and by laying down to grass in the fall, may be brought into good pastures. Moreover, by setting upon the borders of the enclosure the abele, or silver leaf—a tree exactly adapted to such loose and sandy soils, and not liable to be eaten by cattle,—they may be made to improve the appearance of any village, and give an air of thrift and beauty to the waste places of the Cape. Among the articles for manuring such lands, I have derived great advantage from pond mud, carted directly from the bed; but my success with a particular field of this description, which I have cultivated *entirely without manure*, induces me to offer you my mode of management.

The field I allude to is situated in a central part of the town of Harwich, and bounded on one side by the county road, on the other side by a pond, and contains eleven and one-half acres. I purchased it three years ago, giving eighty dollars for the lot. It was then, and had been for several years a common. It had been worn out by the *skinning process*, and some portions of it had already begun to *blow*, and to assume the appearance of beach sand. It had often been offered for sale, at a price considerably less than that which I paid for it, but it was considered hardly worth the fencing.

In the spring of 1847, I fenced it with post and rail fence, at a cost of seventy dollars, using cedar posts and chestnut

rails, which, by the way, I consider the most economical fencing for this region. Commenced ploughing it as late as the first of May, with one horse, and Prouty's No. 21 plough; ploughed it very deep, at all times bringing up the subsoil, which was sand mixed with a yellowish loam. I planted it the 19th and 20th of May, with corn called the smutty white, in hills four feet apart each way. The after cultivation was very thorough, and to this, together with the deep ploughing, I attribute, more than to anything else, the productiveness of the field. I used the cultivator at every hoeing—which was four times—running it very deep, twice in a row both ways. At the second hoeing, pulled all except two plants in a hill. At the last hoeing, 25th August, sowed rye, oats, and grass seed, putting on to the acre twelve quarts rye, sixteen quarts oats, eight quarts herds grass, twelve quarts red top, and eight pounds clover seed.

I raised from this field one hundred and fifty-six bushels of corn, of excellent quality, which sold readily at eighty-five cents per bushel, and thirty-eight bushels of potatoes. The crop of rye taken off the next year measured fifty-five bushels.

The grass seed took well, and has brought the field into a fine sward and good pasturage. The oats sowed along with the grass seed having grown up six or eight inches in the fall, were cut down by the frost, and served as a coating of manure for the nourishment of the grass and rye plants.

Statement of the Produce of the Field.

156 bushels corn, at 85c.,	-	-	-	-	\$132 60
35 do. hog corn, at 25c.,	-	-	-	-	8 75
Husks and stalks	-	-	-	-	20 00
38 bushels potatoes, at 75c.,	-	-	-	-	28 50
55 do. rye, at 80c.,	-	-	-	-	44 00
Pumpkins,	-	-	-	-	5 00
Rye straw,	-	-	-	-	10 00
					<hr/>
					\$248 85
Deduct one half for cultivating,				\$124 42	
“ rye, oats, and grass seed sown,				25 00	
“ interest on land and fence,				5 50	154 92

Total receipts for produce,	-	-	-	-	-	\$248 85
Expense of cultivation,	-	"	-	-	-	154 92

Profit,	-	-	-	-	-	\$93 93
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Old Field in Account with the Owner, Dr.

Dec. 20, 1846,	To paid for land,	-	-	-	-	\$80 00
April 25, 1847,	" cost of fencing,	-	-	-	-	70 00
	" 50 abele and locust trees, and setting,	-	-	-	-	5 00
	" balance of interest, and taxes to October, 1849,	-	-	-	-	4 00
						<hr/>
						\$159 00

Contra Cr.

By profit from crops, 1847-8,	-	-	-	-	\$93 93
" pasture, 1848, -	-	-	-	-	5 50
" rec'd for 91 rods land, sold for house lot, -	-	-	-	-	36 00
" pasture, 1849, -	-	-	-	-	15 00
					<hr/>
					\$150 43
					<hr/>
Balance,	-	-	-	-	\$8 57

It appears by the foregoing statement and account, that the field now contains about eleven acres, well fenced, and in good heart, and that it stands me in eight dollars and fifty-seven cents.

HARWICH, *October 16, 1849.*

PRODUCE.

The committee, (OBED BROOKS, JR., *Chairman*,) awarded the following premiums:—

On oats, to Braley Jenkins, Jr., of Barnstable, he having raised thirty-eight and one-quarter bushels on one-half acre, 1st premium, - - - - \$3 00

On oats, to Edward Bacon, of Barnstable, he having raised fifty-two bushels on one acre, 2d premium,	\$1 50
On rye, to James H. Knowles, of Eastham, he having raised twenty-eight and one-half bushels on three-quarters of an acre, 1st premium, - - -	5 00
On Barley, to Samuel Childs, of Barnstable, he having raised twenty-five bushels on three-quarters of an acre, 1st premium, - - - - -	3 00
On wheat, to James H. Knowles, of Eastham, he having raised fourteen and a half bushels on one acre, 1st premium, - - - - -	4 00
On Beans, to Joseph Bodfish, of Barnstable, he having raised six bushels on forty-two rods of land, 1st premium, - - - - -	4 00
On potatoes, to Edward Thacher, of Yarmouth, he having raised one hundred and twenty bushels on half an acre, 1st premium, -	5 00
“ “ to Joseph Bodfish, of Barnstable, he having raised seventy-five bushels on eighty-one rods of land, 2d premium, - -	3 00
French Turnips, to Joseph Bodfish, of Barnstable, he having raised one hundred and twenty-four and one-half bushels on forty-one and one-half rods of land, 1st premium, - - - - -	5 00
English Hay, to Edward Bacon, of Barnstable, he having raised three tons 1215 lbs., of the first quality, on one acre, 1st premium, - - - - -	4 00

Braley Jenkins Jr's. Statement.

The oats that I enter for premium, were raised on land that was planted with corn last year. This year I put on the half acre, six horse loads of fine compost manure, as a top-dressing. The land a sandy loam, with a peat bottom. Yield, thirty-eight and one-quarter bushels.

BARNSTABLE, Oct. 17. 1849.

Edward Bacon's Statement.

I enter, for premium, the growth of hay on one acre of land; the land being measured, about the first of July last, by one of the executive committee. From this acre, I cut, sold, and weighed, from the 13th to the 18th of said July, three tons twelve hundred and fifteen pounds of the best quality of English hay; it being well mixed, and about equal parts, of clover, Timothy, and fine-top. About one-half of said acre has been in grass for over twenty-five years; the other half, for six or seven years. This land is usually mown twice a year, and in the autumn of each year, about ten loads of compost are spread thereon.

GRAPES AND CRANBERRIES.

The committee were gratified at the exhibition of grapes. They believe that the soil of Cape Cod, in well chosen situations, is adapted to the cultivation of this delicious fruit, and it is to be hoped that, in future, we shall see as good specimens as have been presented to-day, and in larger quantities, and by a greater number of contributors. The small lot of Catawba grapes, presented by Edward Hallet, was finely ripened, and was a good illustration of the success with which they can be cultivated on the Cape. The branch of Isabella grapes, presented by Rodney Baxter, exhibited good taste and skill in training, and the fruit was very perfect. It was produced from a vine trained on the side of a building, with a southern exposure, and showed that mode of cultivation to be a profitable one. Probably it is the best that can be adopted in this county, except in places sheltered from storms in some other way. By adopting this manner of raising grapes, the walls of barns, sheds, and dwelling-houses, may be easily covered with crops of excellent fruit, at a very small expense, and without occupying any land that is useful for any other purpose. Considering the care, labor, and cost, necessary to ensure a crop, perhaps

no fruit can be made to yield a better reward, and its cultivation may be successfully undertaken, by persons of the most limited means. The committee have awarded

To Russell Hinckley, of Barnstable, the first premium,
for experiments in the cultivation of cranberries, on
not less than a quarter of an acre of ground, . \$5 00
To Ezekiel Thacher, of Barnstable, the second pre-
mium, do., 3 00

GEORGE MARSTON, *Chairman.*

Russell Hinckley's Statement.

The quarter of an acre of cranberry meadow, I have entered for premium, was, previous to the autumn of 1843, used as a pasture, and produced nothing but a coarse kind of grass, and a few natural cranberry vines. In the autumn of that year, I enclosed the piece by a ditch, three feet in width and depth, which answered the purpose of a fence. I then covered the same with beach sand, to the depth of six inches, which I considered sufficient to kill the grass. In the following spring, I set the same with cranberry vines, obtained from Sandy Neck, (so called.) In about three years from the time of setting, the vines covered the ground, and bore a few cranberries. They have continued to increase, and this year I have picked from them, twelve bushels of excellent cranberries, a specimen of which I present herewith. From one rod of the above piece, I picked one bushel and one-half of cranberries. The expense of sanding, I estimate at twenty-five dollars.

BARNSTABLE, *October 17, 1849.*

FRUIT TREES.

There appears to have been, among the farmers of this county, many discouraging circumstances in the cultivation of fruit trees. Their efforts have been crowned with so little

success, that but few have made application for premiums. In some parts of the county, the borer has been unusually destructive ; while in other sections, the slug-worm has proved equally as ruinous, to the growth of young peach, pear, and quince trees. The committee would state, however, that they have awarded a premium of three dollars, to George Lovell, of Barnstable, for the best cultivated quince orchard. He has five trees that are fifty, ten that are eleven, and fifteen that are five years old. All but three of these trees are of the best quality of pear-quinces, and are good bearers. Last year, these trees produced forty bushels ; and it is estimated that they will produce, this autumn, fifty bushels. The oldest are vigorous and healthy, and bear as abundantly as at any former period.

A portion of them stand upon a ridge, thrown up from a flag bottom ; the others, upon land made over the flags, and do not suffer from drought. Mr. Lovell's practice has been, to put a wheelbarrow load of horse manure around each tree, every autumn, allowing his hens to work around them, to keep the earth loose, and free from grass. They have a southern aspect, and are sheltered from the north and northwest winds, by a tight board fence. They have not been troubled with the borer ; and, while loaded with fruit, many of the new branches have grown between five and six feet, the past season. The whole ground occupied by these trees, is eighteen rods.

The committee have also awarded a premium of three dollars, to Lot Hinckley, of Barnstable, for the successful cultivation of one hundred and eighty peach trees, which are now in a flourishing condition. Some of them were planted in 1846, and have borne fruit abundantly, the past season.

S. B. PHINNEY, *Chairman.*

MILCH Cows.

There was awarded, by the Committee on Milch Cows,
(LORING CROCKER, *Chairman.*)

To Joshua Thayer, of Barnstable, 1st premium, . \$6 00

To Lot Hinckley, of Barnstable, 2d premium,	.	\$5 00
“ Joseph Cobb, do. 3d do.	.	3 00

Joshua Thayer's Statement.

The cow which I exhibit for premium, is of native breed, and ten years old. She calved, March 27, 1849. The calf was killed at six weeks old, and weighed eighty-eight pounds, without the head and hide. During the past season, she has had no other feed than common pasturage. In the month of June, she gave three hundred and fifty-nine quarts of milk, from which I made forty pounds of butter. In the month of September, she gave one hundred and eighty-three quarts of milk, from which I made twenty-one pounds of butter. I have no accurate means of judging of the richness of her milk, although the average has been one pound of butter from nine quarts of milk.

BARNSTABLE, October 17, 1849.

Lot Hinckley's Statement.

The cow I offer for premium, calved in April last. I killed the calf when four weeks old, which weighed twenty-five and a half pounds to the quarter. The cow gave fifteen quarts of milk per day, in June, which weighed two pounds ten ounces to the quart. I made and sold twenty-three pounds of butter from her milk, in the month of June, besides the butter and milk used in my family. In September, she gave nine quarts of milk per day, weighing two pounds thirteen ounces to the quart, and making twenty pounds of butter, besides the milk used in the family.

BARNSTABLE, October 17, 1849.

Joseph Cobb's Statement.

The cow which I present for premium, is four years old. She calved in May. In June, she gave eleven quarts of milk per day, and made thirty-nine pounds of butter. Her feed was common pasture. In September, she gave six quarts of milk per day, which made twenty-four pounds of butter.

BARNSTABLE, *October* 17, 1849.

ABSTRACT,

Showing for what objects Premiums were offered by the several Agricultural Societies in 1849, and the amounts of the same.

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town.	Steers.	Fat Cattle.	Horses and Colls.	Sheep.	Swine.	Poultry.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing—with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Ploughs.	Management of Farms.	Gardens.	Reclaiming Wet Meadows.	Reclaiming Waste or Barren Land.	Subduing Bushes in Pastures.	Extirminating Weeds in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a Manure.	Preparation of Compost Manure.	Application of Compost Manure to Mowing Fields.	Application of Sea Weeds.		
Essex, -	\$18	\$34	\$47	\$28	-	\$30	\$23	\$48	\$12	\$27	\$17	\$28	\$20	\$20	-	-	\$25	\$100	-	\$45	-	-	-	-	\$25	-	\$25	\$15	-	-	-	-
Middlesex, -	45	44	24	20	-	17	-	-	-	30	-	28	28	28	-	-	-	72	-	40	-	-	-	-	-	-	-	-	-	-	-	-
Worcester, -	37	81	55	43	-	62	55	-	14	38	14	-	55	-	-	-	-	70	-	30	-	-	-	-	-	25	-	-	-	-	-	-
Hampshire, Franklin, and Hampden, }	28	20	-	20	\$90	30	30	76	12	14	10	-	-	-	\$55	-	8	-	-	-	10	-	-	-	-	25	-	-	-	-	-	-
Hampden, -	20	25	19	45	32	31	46	85	24	26	-	-	-	28	27	\$2	6	45	-	10	\$10	-	-	-	-	16	10	-	-	-	-	-
Berkshire, -	25	42	21	54	-	32	12	68	49	26	-	-	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Housatonic, -	15	12	15	15	-	26	5	41	24	12	-	-	29	29	-	-	-	-	\$9	-	-	-	-	-	-	-	-	-	-	-	-	-
Norfolk, -	18	36	51	23	-	27	10	50	10	40	15	28	20	20	-	-	25	70	-	30	25	-	-	-	30	14	-	-	24	\$25	-	-
Plymouth, -	13	15	21	16	-	18	23	25	-	-	-	-	55	-	-	-	16	60	-	-	-	-	\$16	-	-	17	-	-	-	-	-	-
Bristol, -	44	23	14	22	-	27	25	8	10	18	-	9	20	9	-	-	-	20	-	30	-	-	-	-	-	-	-	-	-	-	-	-
Barnstable, -	20	20	10	27	-	17	22	35	11	29	-	-	35	-	-	-	-	18	-	11	-	-	-	-	\$10	16	9	-	-	-	-	-

PREMIUMS OFFERED—CONTINUED.

SOCIETIES.	Butter.	Cheese.	Honey.	Maple Sugar.	Grain Crop.	Root and Vegetable Crops.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Flowers.	Cranberries.	Forest Trees.	Trees set on the Road side.	Fruit Trees.	Hedges.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and valuable Grasses.	New and valuable varieties of Seedling Potatoes.	New and valuable varieties of Seedling or native Fruits.	Comparative value of Crops as food for cattle.	Fattening Cattle and Swine.	Soiling of Cattle.	Experiments to determine proper distances at which to plant Corn.	Experiments to determine proper time to cut Forest Trees which shoot from the stump.	Implements and Inventions.	Agricultural Essays.	Domestic Manufactures.	Discretionary Premiums.	Whole Amount.		
Essex, -	-	\$48	\$24	-	\$48	\$41	\$8	-	-	\$40	\$10	\$30	\$180	-	\$62	-	-	-	-	-	\$90	\$40	\$15	-	-	-	-	\$10	\$20	\$98	-	\$1351	
Middlesex, -	-	10	-	-	42	23	-	-	-	-	-	50	93	-	52	-	\$60	-	-	-	-	-	-	-	-	-	10	10	-	48	\$50	829	
Worcester, -	-	20	33	-	-	54	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	50	791		
Hampshire, Frank- lin, and Hampden, }	10	6	-	-	30	24	5	-	-	24	-	10	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	46	200	823	
Hampden, -	-	23	16	\$4	24	25	6	-	-	48	-	7	10	-	32	-	-	14	5	-	-	-	-	-	-	-	-	-	-	-	49	100	842
Berkshire, -	-	15	18	-	\$6	11	26	-	\$6	9	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101	-	718	
Housatonic, -	-	12	12	-	72	26	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	-	457	
Norfolk, -	-	26	-	-	40	33	6	-	-	55	15	25	30	-	78	\$15	-	-	-	\$25	90	25	30	\$25	-	-	10	90	77	-	1237	-	
Plymouth, -	-	25	25	-	92	38	10	-	-	40	-	17	150	-	25	-	-	\$12	-	-	-	-	-	-	-	\$20	\$25	12	-	125	-	976	
Bristol, -	-	21	12	11	-	45	27	10	\$9	14	-	15	120	\$27	29	-	-	-	\$8	-	-	-	-	-	-	-	-	-	-	100	-	732	
Barnstable, -	-	10	10	-	-	35	27	4	-	6	-	9	13	-	6	-	-	-	-	-	-	-	-	-	-	-	-	5	-	23	-	438	

ABSTRACT,

Showing for what objects, Premiums and Gratuities were AWARDED by the several Agricultural Societies in 1849, and the amounts of the same.

ABSTRACT OF PREMIUMS.

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SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town.	Sheep.	Horses and Cattle.	Fat Cattle.	Sheep.	Poultry.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Ploughs.	Management of Farms.	Gardens.	Reclaiming Wet Meadows.	Reclaiming Waste or Barren Land.	Subduing Bushes in Pastures.	Extirminating Weeds in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a Manure.	Preparation of Compost Manure.	Application of Compost Manure to Mowing Fields.	Application of Sea Weeds.
Essex, -	18	24	39	28	-	17	23	28	7	25	21	28	20	18	-	-	-	45	-	-	-	-	-	-	-	-	-	-	-
Middlesex, -	41	30	14	20	-	12	-	-	-	28	28	28	29	-	-	-	-	77	-	-	46	-	-	-	-	-	10	-	-
Worcester, -	37	15	55	43	-	61	55	-	14	38	14	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hampshire, Franklin, and Hampden, }	28	18	13	28	50	30	30	76	5	21	-	-	-	55	-	-	15	-	-	-	10	-	-	-	10	-	-	-	-
Hampden, -	21	7	20	59	41	29	40	78	15	26	1	-	-	27	-	-	-	20	-	-	10	4	-	-	-	-	-	-	-
Berkshire, -	28	42	21	59	-	19	-	68	37	25	-	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Housatonic, -	19	12	15	19	10	17	-	41	22	15	-	26	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norfolk, -	23	36	51	23	-	13	-	43	-	41	11	18	20	20	-	-	-	45	-	-	-	-	-	-	10	-	-	10	8
Plymouth, -	13	12	21	16	-	18	23	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-
Bristol, -	36	28	17	29	-	20	25	14	9	16	2	9	36	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barnstable, -	20	16	5	31	-	15	22	37	6	8	-	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

PREMIUMS AWARDED—CONTINUED.

SOCIETIES.	Butter.	Cheese.	Honey.	Maple Sugar.	Grain Crop.	Root and Vegetable Crops.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Flowers.	Cranberries.	Forest Trees.	Trees set on the Road side.	Fruit Trees.	Hedges.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and valuable Grasses.	New and valuable varieties of Seeding Potatoes.	New and valuable varieties of Seeding or native Fruits.	Comparative value of Crops as food for cattle.	Fattening Cattle and Swine.	Soiling of Cattle.	Experiments to determine the proper time to cut Forest Trees which shoot from the stump.	Implements and Inventions.	Agricultural Essays.	Domestic Manufactures.	Whole Amount.	
Essex, -	-	\$8	-	-	\$30	\$6	-	-	-	\$45	\$16	-	-	-	\$10	-	-	-	-	-	-	-	-	-	-	-	\$17	\$20	\$84	\$628
Middlesex, -	-	10	-	-	10	6	-	-	-	71	-	\$5	-	-	47	-	-	-	-	-	-	-	-	-	-	-	22	-	81	615
Worcester, -	20	33	-	-	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	484
Hampshire, Franklin, and Hampden, }	13	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	483
Hampden, -	23	12	\$3	-	12	3	-	-	-	43	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	5	-	-	78	585
Berkshire, -	18	18	-	\$5	116	30	-	-	\$7	10	-	-	-	-	36	-	-	-	-	-	-	-	-	-	-	20	-	-	131	746
Housatonic, -	12	12	-	-	78	11	-	-	-	3	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	83	450
Norfolk, -	10	-	-	-	16	20	-	-	-	61	15	-	-	-	-	-	-	-	-	-	-	\$10	-	-	-	-	-	10	79	565
Plymouth, -	38	23	-	-	67	18	\$6	-	-	35	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	119	523
Bristol, -	21	9	9	-	12	-	6	-	-	36	-	-	-	\$10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112	465
Barnstable, -	10	10	-	-	21	10	-	\$4	-	15	-	8	-	-	6	-	-	-	-	-	-	-	-	-	-	5	-	-	36	344

Agricultural publications were also offered and awarded, as premiums, by most of the Societies. And by the Norfolk Society, Agricultural Libraries, of the value of \$50, were offered and awarded as premiums to the two towns in the county returning the largest number of members to the Society.

SELECTIONS FROM ADDRESSES
TO
AGRICULTURAL SOCIETIES.

AGRICULTURAL IMPROVEMENTS.

[*Extracts from an Address, by HON. ASA T. NEWHALL, at the last Fair of the Essex Agricultural Society.*]

The agriculture of the county of Essex, and of our State, for some two or three generations after our fathers secured titles to their farms, had erected their buildings and cleared a field for grain and vegetables, set out orchards, and cut away the beaver dams, that flowed many of our meadow lands, on which, they afterwards raised fodder for their cattle, remained about the same.

It is true, they improved their homesteads, by erecting better buildings and better fences, but the sons would plough the same, and generally, only the same fields that had been ploughed by their fathers; and not being acquainted with the proper mode of cultivating the soil, so as to have continued its productiveness, very little improvement was made in farming. It was thought, that only a few patches of the land in our county could ever be made into productive and profitable farms. When we take a look among the farms of the county, and find so large a proportion of them composed of gravel knolls, sand banks, sunken swamps, and wet meadows, (the process of reclamation at that time being unknown,) we have no good reason to condemn their judgment.

It is only about half a century since the first efforts were

made to increase our crops of hay by reclaiming wet meadows, and carrying on to our dry, gravel lands, what was taken from the ditches to drain them. Forty-seven years ago this month, a young man in my neighborhood, commenced the improvement of a piece of sunken meadow and swamp land, by draining, and wheeling on gravel and sand, from four to six inches deep. The neighbors unitedly sneered at the undertaking, and some of them inquired of his father, whether he permitted his son to trade and do business for himself. The son, however, having succeeded by the third year, to raise six tons of timothy and foxtail, on two acres, called upon a son of one who had ridiculed the undertaking, to assist in harvesting the crop. His father, on being made acquainted with the result of the experiment, sent one of his younger sons into a swamp, and kept him there during his minority. But it was many years, before much was done in this branch of improvement ; and most of our farmers thought that land that could not be ploughed, could not be improved.

Some pieces of meadow land, of shallow soil, where the plough would run to or near to, the hard pan beneath, were cultivated, and made productive of rich grasses, for one or two years only ; for, although they were sufficiently ditched, to take the water from the soil above the hard pan, the subsoil would retain the water so long before it found its way to the drains, rendering the earth at the bottom of the roots of the grass so cold, as to reproduce the natural grasses in two or three years, unless it was constantly warmed with manure. But by using the subsoil plough, breaking up and loosening the soil to a greater depth, the draining may be facilitated.

Our wet meadows and swamps, where the mud or peat is from two to ten feet in depth, if capable of being drained at a reasonable expense, are of much greater value for reclamation, than those of a shallow soil ; as by sinking the ditches to a proper depth, they may easily be made as dry as may be desirable for the growth of grain, vegetables and grasses. These lands of deep soil are mostly incapable of being ploughed at the commencement of improvement, and it is bad policy so to do, where they will admit of it. The most economical mode to be adopted,

as far as my experience enables me to speak, is to clear the surface of grasses and bushes, and cover with sand or gravel, sufficient to kill the native growth of vegetation; then manure, and sow with rye and grass, if in the autumn, or with oats and grass, if in the spring or summer; for if the grain fails, the roots of the rye or oats will strengthen the surface, and aid the grass in getting root.

These lands, improved in manner aforesaid, without ploughing, continue productive without any additional expense, much longer than those which have been ploughed; the decomposition of the original growth, which has been covered by the top-dressing, furnishing food for the cultivated grasses. By an experiment I made some twenty years since, by the above mode, on one acre, I obtained good crops of hay for eight years in succession, without any dressing; the ninth season, the crop was somewhat less than a ton; it was then ploughed in the fall of that year, and planted the first day of the following June. The sand and peat had become well mixed, was very mellow and easy to till. The acre produced fifty bushels of corn—having one row of potatoes around the margin. The next year, it produced about forty bushels of barley.

We have an abundance of these lands, as yet in a state of nature, which, if reclaimed and rendered as productive as they might be, and our dry lands sufficiently manured from our peat meadows and swamps, few, if any parts of the State, of the same area, would produce more good hay than our own county.

Our salt marshes, which have been a reliable source for stock fodder, have, within a few years, been thought less of than formerly. The cattle fed upon the hay grown from them, have been represented by a gentleman who stands high in our society, as the successors of Pharaoh's lean kine. The loss of its reputation, as good fodder for cattle has been owing, in my opinion, to its having been fed out before it was fully cured. It was formerly the custom to let our low marsh hay lie in swath, from six to eight days, to make. Recently it has, and I think with more economy, been put up, the weather permitting, in less than half that time, for it is much better to be cured

in stacks, than spread upon the marsh, after it is sufficiently dry to keep; but it requires longer time for making. The low marsh hay is not fully made, until it is six months or a year old. If fed out when green, to cows, the milk will taste of it; if to working cattle, it will weaken them; but when kept till fully cured, it will make good butter, and support the ox at the plough. As cattle require a portion of salt, and will not thrive well without it, the cheapest and easiest way of supplying them, is to feed more or less with this hay, which will furnish food with the salt. Every farm, within a reasonable distance, ought to contain a piece of these lands.

Our marsh lands have been very much improved by ditching; but the improvement has been attributed to draining, which is generally considered one and the same thing, though very different as respects the effects on salt marshes. By recommending the draining of marshes to improve them, it cannot be expected that those whose lands are already too dry, would think of draining, when, in fact, the high and driest parts of the marsh are most benefitted by ditching;—as the ditches are filled, or partly so, twice in twenty-four hours by the tide, which cools and moistens the dry parts, and renders them productive, increasing the crops more than four-fold.

Although we have doubled, if not trebled, our crops of hay, our pastures have deteriorated. Perhaps not more than half the stock is now pastured in the county, certainly not in this section of it, that there was fifty years ago. This diminution of pasturage is attributable to various causes. In some parts of the county, portions of the pasture lands have been converted into house lots, gardens, and tillage. On many of our pastures, the ancient oaks and other forest trees, which were reserved by our fathers for shade and ornament, and were the natural defence of the surface against the scorching and exhausting rays of our summer sun, have been removed.

Another, and perhaps the greatest cause of the deterioration of these lands, is owing to our farmers generally having abandoned the keeping of sheep, which are the best gleaners of pastures, after other stock; readily feeding upon bushes, vines, briars and other foul growth that is left by other stock, and

which will increase and soon run out a pasture, if left to the occupancy of the cow and horse, without the intervention of sheep or the plough. I am confident that sheep, equal to half the number of cows, may be kept in the same pastures without detriment to the cows, by letting the sheep follow the cows from pasture to pasture; and there is no mode which has been recommended for exterminating wood waxen and other noxious weeds, that destroy all valuable growth of vegetation, that can be adopted for this purpose, attended with so little expense, or perhaps I may say with any profit, as that of feeding with sheep. If the surface is cleared by mowing or burning, or both, and fully pastured with sheep, and if so highly stocked as to require some extra feed, the better. In three years the land will be entirely cleared, the soil enriched and fit for the plough, where it is not too rocky, and where it is, it will make good dairy pastures. A very considerable portion of these lands, in this part of our county, have been permitted, and in some instances encouraged, to grow over to wood, which, owing to the rocks and roughness of the surface being unfit for cultivation, is probably for the interest of the owners, and certainly no detriment to the public.

Our pastures might be very much improved, undoubtedly, by planting forest trees upon them of different kinds, according to the nature of the soil.

On our dry, gravelly and sandy soils the locust thrives well; and as they absorb the dew that falls upon them, they do not *decrease*, but rather *increase* the moisture of the soil, and the dropping of the foliage, especially the blossoms, which are very rich, greatly increases the fertility of the land. A plantation of these trees upon any of our dry pasture lands of twelve or fifteen years growth, will more than double the feed, and in the course of thirty years the timber and wood will be worth at least one hundred dollars per acre. In making this assertion I speak advisedly, and am ready to prove the facts, by a grove I have raised from the seed, and planted out within that time. The grass that grows under the locust is very sweet, and readily eaten by cows or horses.

The expense of raising a nursery of these trees is trifling;

the seed germinates well, if the earth is properly prepared ; but as *ours* is colder than their native climate, it is necessary to use some artificial heat. Soaking the seed in warm water will answer the purpose, but a better method is to warm the soil by a fire on the surface either before or after sowing.

The willow on low marshy lands will rather improve the grass than otherwise, and afford a large quantity of wood, it being of rapid growth.

Very little has been done in this county in planting forest trees until recently, and I am happy to know that enterprising gentlemen are now making experiments by planting groves of many kinds of our native as well as foreign varieties. On most of the farms in our county there are patches of waste land that might be profitably appropriated to the growing of wood, and by planting trees on the sides of our highways, much valuable wood might be raised, our thoroughfares ornamented and the public benefitted.

Our crops of corn, grain, and vegetables have been greatly increased by the improved mode of cultivation, which has in a great degree been the fruits of our agricultural societies by collecting and disseminating the results of experiments.

The greatest deficiency of good husbandry of our fields of grain and vegetables, is in permitting the weeds to grow and seed the latter part of the season. The great length of time required to harvest and secure fodder for our cattle during our long winters, and which generally employs all hands in the hay field, permits the weeds to get ahead of the hoe and cultivator, and assert the supremacy, so that many will be discouraged, and give up the contest, as described by the following anecdote.

An aged farmer in the town of Lynn, had a potato patch, some two miles from the homestead, and deferring to hoe at the proper time, at last harnessed his horse, took his plough, apparatus, and boy into his cart, and went to the field, for the purpose of ploughing among his potatoes ; after unharnessing his horse, and unloading his plough, he deliberately walked around the field, carefully inspected it, but returned, harnessed his horse, reloaded his plough, and taking a serious look over

the field, with a long sigh, says, "I wish thee well, but I cannot help thee," and returned home. It would be better, in many instances, to plough in the crop with the weeds, than to permit them to ripen, and shed their seed for a future crop.

As long ago as eighteen hundred twenty-one, premiums were offered for mixed crops of Indian corn, potatoes and bush beans; or any two of them to make a mixed crop, planted in alternate rows or hills. But one premium, I believe, has been claimed, which was for a crop of corn and potatoes planted in alternate rows; the experiment made at that time, by measurement of land and produce, showed that the mixed crop yielded some *nineteen per cent.* more, than that which was planted separately. The corn and potatoes planted in this way are mutual helps to each other; the potatoes shading the roots of the corn and protecting it from the effects of drought, and the corn, in the months of July and August, screening the potatoes from the rays of the sun. The crops planted in this way, adding the value of potatoes in corn, yielding from eighty to one hundred bushels per acre,*

It has generally been thought by farmers, that the ripest corn and potatoes were the best for seed. But so far as my observation goes, corn gathered soon after it is out of the milk, and is but partially glazed, will vegetate and come up, about two days earlier than that which is fully ripened in the field; and as the most critical time for the growing plant is while it lies buried in the earth, the sooner it is up, the less danger in case of storms and wet weather.

Potatoes, to raise for seed, should be planted late in the season, that their growth may be checked by the frost before they

*Since this address was delivered, I have found in the memoirs of the Philadelphia Society for promoting agriculture, a communication from John Lorrain, Esq., stating experiments made by him on mixed crops of Indian corn and potatoes. He says, "he has frequently planted Indian corn in single rows, eight feet asunder, and dropped single corn two feet distant from each other, in rows so as to stand in single plants; when the corn was ridged, potatoes were planted in the clearing out furrows which were filled with rotted dung, and closed by two furrows, backed over the potatoes by the plough. I have had repeatedly forty to fifty bushels of shelled corn, and one hundred to one hundred and fifty bushels of potatoes to the acre. In weight, the crop always exceeded the best corn cultivated in the common way. This mode was suggested to me by Gen. Washington, who told me he had great success in it."

are ripe ; as the unripe potatoes will produce an earlier and more abundant crop than those fully ripened.

The reports we have had upon manures, the process of making composts, and the different materials adapted for the purpose, the different kinds of manure, and their adaptedness to different soils, leave but little further to be said upon the subject ; except perhaps in their application.

After the old mode of manuring in the hill, was succeeded by ploughing and turning it under the furrow, we thought we had secured it from waste, by evaporation, although applied in a coarse state ; but in this I am confident we were mistaken. There is no mode by which manure may be applied to land, in a coarse unbroken state, and be preserved from waste, either by ploughing or harrowing. The scarcity and price of manure renders it all important to the farmer, that it should be applied, so as so receive the fullest benefit from it. In order to do this, the land should be ploughed, harrowed, and rolled, until it is of fine tilth, and the manure should be made fine, the finer the better ; spread, ploughed or harrowed in, when it will be immediately incorporated with the soil, and the crops receive the full benefit of it.

Orcharding, which had been for a great number of years, almost entirely neglected, has for the last twenty or thirty years generally received its full share of the farmer's attention, Sixty years ago there were many old orchards ; but very few had been planted for a number of years previous to that time, and there were very few nurseries in the county, except such as had grown up where the pomace from the cider mills had been deposited in heaps. About this time, when planting out apple orchards recommenced, these wild nurseries furnished almost exclusively, the young plants, which after having been set in orchards for a number of years, were some of them engrafted from old trees, which bore the best fruit we then had : but most of the scions being taken from old trees, or old varieties, the fruit of the young orchards generally bore the marks of old age, and some of them continued to bear but a few years, although set on young and vigorous stocks. Some varieties are wholly extinct. Of the Nourse's sweeting, so called, which

were plenty in this market about sixty years ago, not one is to be found, although many young trees were engrafted with this variety about that time.

We cannot prolong the existence of any particular kind of fruit, by engrafting from old on to young trees, beyond the natural life of the original tree, or the time it would cease to bear fruit by old age, if living. We must go back to the seed for a new generation.

If I am correct, the importance of budding or engrafting our nurseries from new varieties must be apparent, as an orchard of a variety that is not more than twenty or thirty years old, will last seventy or eighty years longer, than one of a variety of an hundred years old, two hundred years being considered the age of the apple tree. I am aware that there are many who will smile at the idea that a scion taken from an old and placed upon a young tree, continues to number its years. They say that its age is renewed as soon as it is supported by the sap of the young tree—that it has no affinity to the old tree. If so, why is not the fruit changed? If the scion, when transmitted to the young stock, does not retain the identity of its nature and species, how could it produce the same fruit of the parent tree? But it cannot be so. We might as well undertake to renew the age of an old cow by turning her into a new pasture, as the age of any species of fruit by ingrafting from old to young trees. It is true that if the cow was better fed, her hair might look more sleek and glossy, but it would not diminish a wrinkle upon her horns.

There is no branch of farming or orcharding where greater improvement has been made than in garden fruits and vegetables. Where a quarter of a century since, in passing over the county, we might see occasionally a solitary pear tree in the front yard, and a peach tree at the back door, we now see beautiful gardens of delicious fruit, ornamented with a great variety of flowers;—one flower only being absent, and that the most precious and delightful in creation—lovely woman; for our ladies seem to have forgotten, or to disregard the fact, that in the first garden ever planted on earth, the woman was placed with the man, “to dress and to keep it.”

Reference has frequently been made in addresses to our society of the propriety and the utility of educating our sons for farmers ; but that of our daughters has rarely been mentioned, although the future condition of our posterity depends more upon the physical education of our females than upon all other circumstances. The employments of farmers' daughters generally, until within some twenty or thirty years, was well calculated to ensure a robust constitution and a vigorous mind ; but circumstances beyond our control, have laid away the healthful spinning-wheel and loom into the archives of the garret, or some untenanted outhouse, and the dairy and housework have very generally been assigned to hired help, as by our present course of education, our daughters must attend school from the age of four to sixteen, eighteen, or twenty years. Fifty years ago, the education of the minds of farmers' daughters was almost wholly neglected, while their occupations were such as to ensure bodily health and vigor. But the course and object of education within a few years past has been almost entirely changed. The great object now seems to be to cultivate, adorn and beautify the mind, to the utter neglect of the growth and strength of their physical powers. "The one ought to be done, and the other not left undone." Many of the young ladies who graduate at our seminaries of learning, return to their paternal homes, pale, emaciated and enfeebled by constant mental exertion and neglect of physical exercise, so that they are unfit for wives and mothers, and incapacitated to perform the duties and enjoy the pleasures and comforts of after life.

As there is nothing appertaining to this world about which parents manifest so much solicitude as the prosperity and happiness of their descendants,—no hope or desire so strong for any future earthly blessing, as that their children and children's children should keep the inheritance they leave to them, and live near the graves, may we not most devoutly hope, that the physical, mental and moral education of our children and their descendants, will be such as to enable them to defend their rights and perpetuate the liberties of their country, and to possess, occupy and enjoy the lands that have been moistened with the tears, the sweat, and the blood of our fathers ?

THE PRIVILEGES AND DUTIES OF FARMERS.

[*Extracts from an Address by HON. LILLY EATON, at the last Fair of the Middlesex Society of Husbandmen and Manufacturers.*]

The farmer should prize his calling, because, more than all others, it promotes physical health. It is an acknowledged law of our being, that our faculties are improved and strengthened by use; and, oppositely, that they are impaired and enfeebled by disuse. Hence, we find the sons of Vulcan, whose sturdy arms and hands have become muscular and strong, by long and hardy exercise, swinging with ease the heaviest sledges; and the porter, bearing upon his head or his shoulders, the most incredible burdens. How nice are the faculties of hearing, of feeling, and of memory, in the blind, who are constrained, by the want of a part of their powers, to exercise and use more constantly those that remain. Observe, too, the effect produced upon the human system, by those occupations that are almost wholly sedentary and inactive. What a large proportion, for instance, of those who fill the learned professions, and who have been close and devoted students for many years, without exercising properly their physical powers, have become wan and pale, weakly and consumptive. That occupation, therefore, which, other things being equal, most effectually calls into action the greatest number of the faculties of the body,—which exercises its limbs, muscles, and other organs, most regularly and equally,—will of course produce the healthiest, the strongest, and the noblest men. What calling is there, so well adapted to this result, as agriculture? The multifarious departments of the farmer's work, are constantly calling into action all the various powers of the body, giving elasticity and strength to each. He breathes the pure atmosphere, uncontaminated by the dust and miasma of the crowded workshop, or by the exhalations that arise from numerous sources, in the populous town or city.

The farmer should be content with his calling, because success therein is more certain, than in any other employment. If he is faithful to his duties, he may consider himself sure of a

living, and of a competence. Let the reverses and disasters that fall upon commerce, mercantile affairs, and manufactures, be what they may, the tiller of the ground, resting on the unfailing promise that seed time and harvest shall not fail, can pursue his vocation, confident that at least the necessities of life shall be his. The fluctuations of trade, the scarcity of money, the frightful epidemic, the storm and the tempest, affect him, if at all, less than other men. The indispensable articles for the support and sustenance of his family, he can raise for himself, and not be dependent on others therefor; and if he have a surplus of these, they are of that sort that are always in fashion, and always in demand, and that will secure in exchange, if any thing will, the comforts and luxuries of life.

The farmer should love agriculture, because it is friendly to peace, to freedom, and independence. It is the emblem of peace. Its implements and its products are the imagery used to express most truly, the sentiments of peace: "The sword shall be beat into the ploughshare, and the spear into the pruning-hook, and they shall learn war no more." "They shall sit, every one under his own vine and fig-tree, having none to molest or make afraid." But while the farmer is, from principle, from habit, and from interest, a friend of peace, he is, at the same time, a lover of freedom. He is the true patriot, who loves his country, not only because it is the place of his birth,—not only on account of its government, laws, and institutions,—but also, because he is one of the proprietors of its soil; owing allegiance to no feudal lord, he feels, he enjoys, he values his freedom and independence. And whenever the iron heel of despotism, or invasion, threatens to tread upon his country's rights, or his own, his strong arm is ever ready to contend in their defence.

The farmer should love his vocation, above all, because it promotes intelligence and virtue. His labors are performed mostly abroad, in the open air; consequently, his senses receive an impress, direct and unobstructed, from the wonders of creation. And this direct intercourse with the wonderful works of his creator,—where, in the light of the sun, he can read from the great book of nature, the wisdom and goodness of God,—

naturally tends to expand the mind, and enlighten the understanding ; wake up the slumbering genius, kindle the imagination, and direct it to noble and heavenly objects, and thus to purify and exalt the soul. He sees,

“ 'Tis love that paints the purple morn,
And bids the clouds, in air upborne,
Their genial drops distil ;
In every vernal beam it glows,
It breathes in every gale that blows,
And glides in every rill.”

Especially should the Middlesex farmer rejoice in his profession and his home, because “ his lines have fallen in such pleasant places, and he has so goodly a heritage.” Our soil may not possess as deep alluvion, nor yield as spontaneous increase, as some localities at the south and west ; we may not be able to raise their yams and sweet potatoes, their cotton, and sugar, and tobacco ; but while all the essentials of life are the products of our soil, with a great variety of the delicacies, we are able, by our health and enterprise, and by our habits of labor, industry, and economy, to command in profusion, with our surplus products, the luxuries of other climes, without their diseases and annoyances. It is likewise true, that we may have to toil more assiduously than the cultivators of more fertile lands, but then our health and strength, and the salubrity of our climate, not only enable us to do so with ease, but with pleasure and profit.

The Middlesex farmer is privileged with the best market places in the land. With three cities, and numerous manufacturing villages in her limits, all flourishing, and rapidly increasing in population and wealth ; possessing, in the fairs of Brighton and Cambridge, the best cattle fairs in the country ; in close proximity with the metropolis of New England, and surrounded on all sides, in immediate nearness, as is the Middlesex farmer, with other large and flourishing cities and towns, he is always sure of a good home market. Or, if he desire to avail himself of more distant marts, the huge steam horse stands champing and foaming upon the iron tracks, that diverge from our county in every direction ; and on our harbors and rivers float the ships, that sail to every quarter of the globe.

Do our farmers desire a settlement in a land already highly cultivated, abounding in smiling fields, in bending orchards, and fragrant gardens? The horticulture of Brighton, of Newton, of Watertown, of Cambridge, and of Waltham; the luxuriant fields and pastures of Marlborough, and Framingham, and Groton and Westford, stand unrivalled. And there is a growing disposition, all around, to increase the beauty and attractions of home, of our public streets and walks, and of our cemeteries, by the cultivation of ornamental trees, of shrubbery, and flowers.

With such high privileges and advantages, what are the duties and obligations of the Middlesex farmer? He should encourage, more than ever he has yet done, his sons and his daughters to remain, a larger proportion of them, in their native fields. Our young men should be exhorted to place a higher estimate upon the profession of agriculture. There is a growing propensity among our young men, to live without manual labor, or with the least possible quantity. Hence, we see multitudes of them, despising the vocation of their ancestors, seeking for clerkships, and secretaryships, and agencies; or dashing, without capital or talent, into trade or manufactures, and obtaining from the credulity of others, the borrowed means of sporting a carriage, and arraying their persons in the extreme of fashion. These young people should be instructed, that, of the whole population, nature designs but a small proportion for merchants and master mechanics, for fine gentlemen and ladies; that the great mass of mankind must, of course, be laborers,—not necessarily slaves and serfs, but independent laborers. The operations of nature are designed and guided by an omniscient mind; and the same intelligence which gives but one queen bee to a legion of working bees, exercises the same wise care over the affairs of men. Hence we find, that while a great majority of mankind are born with similar intellects, here and there superior minds appear, to meet the emergencies that arise; master spirits spring up, just enough to lead the vast multitude on; one is a mechanic, like Franklin, or Fulton; and another a merchant, like Gray, Girard, or Astor.

Let the sun of science but concentrate its rays upon agricul-

ture, as powerfully as it already has done upon the mechanic arts, and results as wonderful and startling would appear in the former, as have appeared in the latter. The slumbering genius of our farmers would be kindled into a flame ; their barn-yards and swine-yards would become so many laboratories, where, with all the zeal of the ancient alchymists, they would seek, and, with better success, they would find, the true philosopher's stone, that will transmute the various earths into rich and genial soil ; that will increase the quality and quantity of the various products of the farm, an hundred fold, and make the barren hills smile, and the sandy plains bud and blossom like the rose. To this end, let farmers encourage the dissemination of knowledge among themselves and the rising generation. Let them favor the introduction and pursuit, in our common schools, of those branches of science that serve to unfold the philosophy of nature, and afford the youthful mind an opportunity to acquire those principles and ideas, which shall be of practical use to them as farmers.

THE APPLICATION OF SCIENCE TO FARMING.

[*Extracts from an Address, delivered at the last Fair of the Hampden County Agricultural Society, by W. C. GOLDTHWAIT, Principal of Westfield Academy.*]

One obvious suggestion of science is with regard to reclaiming our sandy soils. Most of our cultivated lands consist of sand and clay, mixed in widely differing proportions. The use of the clay is to give adhesiveness and retentiveness to the soil ; without this the ground would be quite too porous to retain either moisture or manure. The use of the sand is to give porousness and friability to the soil. Now when the proportion of clay falls below say ten parts in a hundred upon an upland soil, we may suspect that the specimen was brought from some of those plains that have been sacredly devoted to white beans, ever since the memory of the oldest inhabitant. These plains were once covered with a noble forest of pines ; but the avarice of the owners has long since shorn them of their green honors, and successively diminishing crops of rye and slim corn have

completely expunged all vegetable promise, and left a residuum of thin soil, and, in some cases, the whitest sand. It is presumed that this county alone contains, as a general estimate twenty thousand acres of this soil, and if we have resources within our reach for reclaiming it, it is matter of the truest policy to discover and apply them. Now what says science? Why if this land is too porous and friable for want of clay, then supply what is wanting. Nature has fortunately so disposed the different kinds of earth, that no part of our territory is very remote from a deposite of the best clay. This costs nothing but the labor of removal, and though in most cases it will not act as a manure, yet it will render the effect of all manure more lasting, and render the soil more moist and more fit for future cultivation.

I have tried some experiments of this kind, putting on about eighty cords to the acre, or, say three inches in depth. The expense of this, if the work had all been hired, might have been \$40 or \$50 to the acre. If done at odd spells, and by the farmer himself, it would be less. Some may prefer a lighter dressing; but in farming, as well as elsewhere, work once well done is twice done, and even at the highest named price, I think you would better do it than attempt to reclaim by manure a soil, every foot of which is little better than a sieve. The effects of this course of treatment are exceedingly durable. Fields within my knowledge that were so treated a long time ago, have exhibited the beneficial effects after the lapse of twenty-five years. It should be remarked that much care is necessary that the clay is thoroughly mixed with the soil, or much of it will prove little better than blocks of stone. Exposure to the frost before ploughing in, is one of the most efficient means of accomplishing this. Water expands in freezing; hence moist earth expands under the influence of frost and becomes disintegrated. The use of the harrow, after the clay has frozen and dried, will be exceedingly efficient. I call your attention therefore to this matter, and ask an experiment in a small way to test the propriety of the thing.

There are other methods of gaining the same end, though I think none so effectual. If we can fill the soil with decayed

vegetable matter, it will secure nearly the same result for the purposes of cultivation. Hence ploughing in crops cannot be too highly recommended; but we should ever bear in mind that for its purpose one *dry* crop is worth two green ones; for the simple reason that the one will decay and leave the matter in the soil, while the other will ferment and throw it off mostly in the form of gas. When by the use of clay or other means, land is so far reclaimed that it will bear a crop of clover, it is in a hopeful way. By ploughing in this, or indeed almost any thing that has grown upon the soil, the poorest land may eventually be reclaimed.

Another suggestion which science makes to the farmer is with regard to the use of peat. There is almost an endless number of swamps in the county, varying from a few rods to a mile or more in circumference, filled with this substance. It is the deposit of successive crops of vegetation, rushes and water-grass and stray leaves; it has been packed and trodden down by the slow and heavy tramp of centuries. But vegetable matter will not ordinarily resist the process of decay so long; and therefore the wisdom that buried this, has also embalmed it, and secured it from decay by impregnating it with a peculiar *acid*,—that is, it is fairly *pickled*, and it is almost proof against decay, so that a log buried in the midst of it will outlive as many centuries as a mummy in one of the old pyramids. This seems to me a wonderful provision of the all-wise Providence; and yet it totally unfits most peat for present use; it is frequently *poison* when applied to land in its raw state. It must be neutralized, subdued, sweetened.

There are various ways of accomplishing this; one is by exposing it to the action of the sun, rain, and frost. I have now some cases in mind, where for several years, the effect of the application of this substance was decidedly bad; but the lapse of time and the influences I have spoken of, seemed to help its moroseness and gradually it formed a combination with the elements of vegetable life, and the ultimate effect has been most happy and durable. Another method is by mixing it with some substance of an opposite quality, which shall destroy its acid nature. Wood ashes, and of course potash, will do.

this ; and soda, lime, and hartshorn, will answer. Still, only the first three are mentioned as suitable for common use. I have known some experiments with *lime*, that were not apparently successful. If, therefore, says Dr. Dana, you mix with one cord of peat, eight bushels of good wood ashes, or twenty pounds of soda ash, or thirty pounds of potash, and effect a complete mixture by frequent shovelling, you will have a cord of fertilizing substance, as good as the real "Simon Pure" of your stables. It may not act as quickly, but it will be more enduring.

The dictate of science, as well as of practical wisdom, is to fill up every sty, and pave every cow-yard with the sour issues of swamp holes, ditches, and peat-bogs, and you will find that the swiny people, with all their imputed laziness, will transmute these matters into something that will make your rejoicing wheat-fields, and clover, and corn, dress themselves in a deeper green. Not a particle of manure should be suffered to accumulate about house or barn, without being *at once* mixed with this peat or some similar substance ; and not a load of manure should be suffered to leave the yard, till it has been compounded in a similar manner and made two, each of which will be not less valuable than the original one. I may say, in dismissing this topic, that any decaying animal substance, as the blood of slaughtered animals, or putrifying flesh, and the like, is invaluable for this purpose. We are told that "a dead horse will convert twenty tons of peat into the best manure." I suggest to you the propriety of setting all your dead horses at work in this way,—and some of your live ones !

Another and most profitable suggestion of science, is with regard to manures. The fertilizing matters which we carry from the yard on to our lands, consist mainly of three elements,—*decayed vegetable matter, salts of various kinds, and ammonia* ; so that if any one of your waggons, heavily laden with the best products of the stable, were to be hailed by a "professor of gas," for the purpose of ascertaining the nature of the cargo, he would tell you, to your surprise, that more than eighty parts in a hundred of that load of *clear manure* are water !—just as good as the average contents of the Connecticut, that rolls its

waves down through our valley, and no better ; that perhaps fifteen parts in one hundred are decayed vegetable matter ; that perhaps two or three parts in a hundred are salts of various kinds, of common salt, sulphate of lime, (which is plaster of Paris,) phosphate of lime, (of which bones are composed,) and so on ; all which salts are valuable, exceedingly, but over their presence we have little control ; that perhaps one-half of one hundredth, or ten pounds in the ton, consist of a substance which I have already introduced to you under the name of ammonia.

But this last named substance, which the uneducated farmer overlooks entirely, is like gold dust in a heap of sand, *the* valuable part. In its uncombined state no mortal eye can see it, for it is perfectly invisible ; but unless it is present in the wagon, you might about as well tip your load into the next brook and go home. It is the vitality of all domestic manure. If you would know more of it, it is the very same gas that escapes from a smelling bottle when uncorked ; it is powerful, pungent, and reviving. It also rises from the wet floor of a stable, and especially from the saturated earth beneath the stable. We do not say that the whole value of manure lies in this substance. By no means ; there are other gases evolved in the process of fermentation of importance, and many of the solid elements are indispensable. But for the other ingredients of common manure, we need feel less solicitude. They are more certainly present, and are less volatile in their nature. The methods taken to preserve this, will also for the greater part preserve those. We may therefore say that the value of manure, is proportioned to its power of producing ammonia. Even the different samples of Guano, exposed in the markets of Edinburgh, which have been analyzed by the chemist, command a price, which corresponds almost exactly to the quantity of this article they can evolve. I should add that this gas is exceedingly light ; it is no sooner formed than it mounts the air, and in a few days it may be diffusing itself over the ice of the Polar regions, or deepening the green on the other side of the tropics.

Now what says science here ? Why it says most plainly to every husbandman who owns a barn or a stable ! " Save

these gases; they are the best perfumery the farmer can have." But how can we save them? There are many ways. If a weak solution of the *oil of vitriol* be sprinkled upon any surface, or mixed with any liquid that is yielding this gas, the peculiar smell will no longer be perceived. Without the aid of sealed jars and close stoppers, simply by the laws of chemical affinity, it lies a prisoner, as much at your service as the ox that is tied in the stall. It is no longer volatile—it is fixed. But the oil of vitriol is a dangerous compound, and should be employed by none but the chemist. A very convenient substitute for this is found in the article *copperas*, which is sold in the shops, and which is composed partly of oil of vitriol. A solution of this is perfectly harmless, and is effective for sprinkling the places I have alluded to. A still cheaper and more convenient, though not so effective substance, is plaster of Paris, which also contains vitriol. If this be scattered freely upon any place, which is evolving ammonia, the smell will at once be destroyed; and from this we learn that it forms a chemical union with the gas and *fixes* it. So also pulverized charcoal is quite efficient; it forms no chemical union; but one known property of charcoal is that it will absorb and retain large quantities of gaseous substances, especially if it be made from hard wood and be recently prepared. A mixture of equal parts of plaster of Paris and pulverized charcoal, will be very effective, for retaining this airy compound I speak of. And the intelligent farmer will not forget that *fresh earth* of every kind, and most of all, *peat*, have the power of absorbing and holding large quantities of aeriform substances. With all these methods of prevention then, if farmers allow the idle winds to steal odors from them, and rifle their manures of their richest ingredients, they are quite inexcusable.

And what shall I say of those piles of fertilizing substances, that lie around our stable doors, and on the bottom of our cow-yards, exposed to sun, wind, and rain? Does not every farmer know that not any vegetable or animal product can be exposed to the air, and moisture, and a temperature above sixty degrees, without at once beginning to ferment; and that during this process vast quantities of various gases roll away, like

smoke from a field of battle, or a burning forest? What shall we say then of that wasteful and profligate farming that exposes these decaying substances in the open air, at such an immense loss? What shall we say of *rotten manures*, as they are called, from which one half, and it may be three fourths of the vitality has gone, gone to the thankless winds? Let every particle of these fresh manures and decaying products be gathered up, and laid away in some secure place out of the sun and rain; let them be sprinkled with copperas water, or plaster of Paris and charcoal, and above all let them be mixed with a large quantity of fresh earth or peat, so that the vagrant air may no longer steal from you those elements, for which every blade of grass sends in a most respectful petition. Do you say you cannot afford to be at all this trouble? Then you cannot afford to darn a hole in your money purse, or drive an ox away from your corn crib!

I have thus, briefly and all imperfectly, suggested some of the ways in which science may be applied to agriculture. These, it is true, are not all the suggestions of science, strictly so called; but they are the teachings, as I understand it, of enlightened husbandry, guided by science. Nothing will supply the place of sound judgment and close application, in these matters; but, if I mistake not, science and intelligent enterprise are to work a reformation in this business, and make it a more regular, as well as honorable pursuit. From visionary farming, ever deliver us! But the teachings of sound science are not visionary; and in the midst of the vagueness, and guess-work, and profligate waste, that now characterize this business, we need her almost infallible guidance. She has already outstretched the railroad, and conquered space; she has outhung the telegraphic wires, and almost annihilated time; she has recently uplifted her eye to the starry heavens, and, almost with an impiety that would dictate to the creator, told where a new planet *should be*, and then turned the optic tube of the astronomer to the very spot, and proved that it was right there! And now, who does not invoke her aid in the most necessary and noblest of all works, the cultivation of the earth.

But to avail ourselves of the revelations of science, we must

be ourselves, to some extent, scientific men. If science is to teach us, we must learn the language of science. So long as a majority of our farmers cannot tell the difference between ammonia and ambiguity, and are completely bewildered in a column of sulphates and alkalies, how can we expect that they will profit very largely, by the splendid revelations and animating prospects of the chemical student? If scientific lecturers approach you, for the purpose of imparting to you some of the truths of philosophy, they must, as the phrase is, "fire low," in order to reach you. They must speak of the most splendid discoveries, of the most interesting compounds, of the most abstruse principles, without (as you say,) the use of one scientific term, or one word that is guilty of being recently derived from the Greek. This is asking quite too much; for every science has its peculiar terms, that express the idea intended, better than any other words, or circumlocutions, or secondary phrases, possibly can.

Then, farmers, let us raise ourselves; let us be ashamed to be ignorant of any thing we ought to know. Let us make the plain principles of philosophy, and the needful terms of chemistry, as familiar as household words. Let us buy and read, now simple, and by and by more abstruse, books of science; and diversify, I should rather say, beautify, our long winter evenings, and rainy days, with some pleasing and profitable course of reading and study; and then, with a diploma, or without one, we shall soon be educated men;—in the pleasing sentiment of Sir William Jones, though we may have the fortune of peasants, we shall have the education of princes.

If the applications of science to farming are so abundant and promising,—if the opportunities for improvement are so numerous,—if the capabilities of our soil are so great,—let us go home to our farms to-day, resolutely determined to make better farmers, as well as more intelligent men. Let us pledge ourselves here, in the presence of one another, that we will not halt in the work of improvement, until we have turned every stream of now wasted fertility into our waiting fields, and until we have tested, to the utmost, every acre, of which the great husbandman and master chemist has made us the proprietors

and overseers. Ours is not merely a life of drudgery, though it sometimes drags a weary foot, and wipes the dripping sweat with a brown, hot hand. It is enlivened by oft-recurring seasons of most delightful repose, and rare opportunities for self-improvement. It consorts us, in employment, with the greatest and best of our race. And it is a pleasing consideration, that while we are enjoying the sweets of agricultural and domestic life, thousands from all the dusty avenues of business, are looking forward to a participation in the same enjoyment. Men who have won the prize in the race of literary fame,—men who have tasted the sweets of commercial enterprise and success,—men who have worn the dust, and won the crown, in the arena of political life,—anticipate a period of retirement, and the possession of a farm, as the harbor of repose and bliss, after the more tempestuous voyage of life.

The statesman, lawyer, merchant, man of trade,
Pants for the retreat of some cooling shade ;
Where, his long anxieties forgot,
Amid the charms of some sequestered spot,
He may possess the joys he thinks he sees,
Lay his old head upon a lap of ease ;
Improve the remnant of his wasted span,
And having lived a trifler, die a man.

THE NECESSITY FOR THE IMPROVEMENT OF THE SOIL, AND THE MEANS OF EFFECTING IT.

[*An Address delivered before the Hampshire, Franklin, and Hampden Agricultural Society, at its Annual Fair, 1849, by JOHN P. NORTON, Professor of Agricultural Chemistry, Yale College.*]

When I addressed you last year, on the occasion of your annual show, I did not anticipate the pleasure of so soon coming hither again. Apart from the danger, that a speaker who has already appeared before you, may not be able to arrest your attention in the same degree as one whose matter and whose manner possess the charm of novelty, there is an advantage in thus twice addressing the same audience.

Some ideas which were not properly explained on the previous occasion, may now be more clearly presented; some points which were then untouched, may now be brought to your notice. There is, in short, an opportunity to deepen and confirm any slight impression which may then have been made. I say slight impression, for that is all that can be expected from one of these detached lectures. The department of knowledge to be treated of is so vast, and the community in general knows so little of it,—at least of the scientific part,—that even if remarks upon some new course, upon some decided improvements, are received favorably at first, they are apt to be soon forgotten; there are few who have the energy and enterprise requisite for entering, to any very important extent, into experiments and investments that they have never seen tried, and the reasons of which they do not clearly understand. Even the *best* farmers of this country, in most cases, venture with timidity into new courses. In this they are generally quite right, for their knowledge, as business men, teaches them that rashness is almost sure to end in disappointment. It is, however, to be lamented, that, in this case, they will not more freely depart from their usual custom, of doing nothing but what they have done themselves, or seen others do.

It would be better, if they could understand all that scientific men say, as then they could judge for themselves; but with many, perhaps I may say most, of those mature in years, this is out of the question; they have (or, at least, think so,) neither the time nor the inclination for study, and are hence rather inclined to wait, hoping that others will lead the way for them. This is now the great difficulty under which we labor. Numbers of farmers may be found, who believe that there is something in the applications of science to agriculture, but there are few who really and clearly understand what is the precise nature of these applications. There are men enough who have a desire to improve, but they do not exactly know what to do, or where to begin. This is a hindrance to rapid progress, which is not easily gotten over. It will not be overcome, until we have persons who are capable of taking the lead in each district. Our young men must devote themselves to this depart-

ment of knowledge ; must read, attend lectures, or seek instruction in some of the many ways now open to them. Some ought to qualify themselves as thorough chemists, competent to analyze soils, manures, &c. Such men are now coming fast into request ; a demand is springing up for them, from various parts of the country ; the farmers, in every district where much improvement has been made, want some one permanently among them, who shall be competent to give definite information, to make analyses, and to explain disputed questions. If a portion of the young men, now so eagerly crowding schools of law and medicine, or of those who prefer the paths of mercantile life, would turn their energies in this direction, they would not only be of much greater service to the community, but would greatly better their own prospects ; for they would enter a profession not already overstocked,—one in which, at the present time, industry and ability are very sure of speedy success.

But while such men are preparing to give instruction,—while the young generation is growing up,—much, very much, may be done by the practical men of the present time. Much has already been done, as may be seen, within the limits of your own society. How much land has been reclaimed, how much has been improved, how many farms exhibit evidences of increasing fertility. Then, too, as regards implements and stock, how great is the advance, even within my own recollection. In both of these departments, improvement has, for the last few years, been most rapid ; indeed, it has, in my judgment, far more than kept pace with the improvement of land. We frequently see farms, where the stock and implements are better than they were ten years ago, but where the land is far worse. The farmer must now, in my opinion, learn to invest money as freely, or more freely, if he pleases, in benefitting his land, as he has done in purchasing better tools, or better animals. He may get larger crops, by using a new plough, because it breaks up and mellows the soil more thoroughly, but unless he at the same time manures more liberally, the land is constantly growing poorer ; he has only discovered another way of exhausting it ; the new plough adds nothing,—it only furnishes the farmer

a means of taking away larger quantities than he has ever been able to obtain before.

It is to the improvement of the soil, as I conceive, that the practical man ought now to especially turn his attention. He must no longer be afraid of the hard names, which scientific men mention, when they are talking of the substances which make up his soils and plants. It would not be difficult for him to master these, so as to become quite familiar with them; but whether he does this or not, let him try some experiments, as he is advised to do, and see if the results are not satisfactory. Even if unsuccessful at first, let him not throw up the matter at once, and say that he knew the whole thing was a "take in," but let him think whether he has not made some mistake, and try again.

I have talked, for instance, to hundreds of farmers, about the great benefit to be derived from the use of bones as a manure. You all know, that probably nine-tenths of the bones in this country are thrown away,—at least, so far as agriculture is concerned. I do not suppose, that one in a hundred of those who have heard me, have, in consequence, ever done anything toward saving and applying their bones. Yet this very application is one of the greatest features in modern improved husbandry. Let me, by way of illustration, explain briefly the nature and composition of bones, and the reasons why they are so valuable.

When we examine the bones of men, of animals, of birds, or of fishes, we find that in all, there is one particular substance present, in large quantity. This substance is called phosphoric acid. It is present in combination with lime, forming what is called phosphate of lime. Beside this, there are found small quantities of other mineral substances: carbonate of lime, carbonate of magnesia, oxide of iron, and a little silica. These are the mineral constituents; there is also an animal organic substance, in large quantity, called gelatine. This is that which makes glue, when boiled out by the glue manufacturers. Beside all these, fresh bones contain much water; in those of fishes, this amounts to a large portion of the whole; but when

dried, all the varieties of bones, have more than half their weight of phosphate of lime.

When buried whole in the soil, they last during a very long period of time. Some experiments are recorded, in which various bones were taken up, after having been buried eight or ten years. They had scarcely changed as to size, but a chemical examination proved that they had been undergoing a gradual change in composition. Some parts had disappeared more than others, but still, it was evident that the bones would remain capable of affording nourishment to plants, for many years longer.

When applied crushed or ground, their decay is quicker ; of course, they do not last nearly so long, but their effect upon vegetation is more immediate and powerful. They are easily ground in a common plaster mill. When there is a demand, such mills will be established in every district.

There is one other form, in which they produce a still more marked effect. This is that of boiled bones ; these are bones that have been boiled by the glue makers. A large portion of the gelatine, one of their most valuable parts, is thus dissolved out, but some remains ; and the whole bone is so softened, that it much more readily decomposes in the soil, thus at once affording nourishment to the crop.

It may be urged, that, as bones decrease so slowly in the soil, the small quantity of matter annually drawn from them, can really be of very little importance. This objection is met, by reference to analyses of the ash from our grain crops, for instance. We there find, that in the ash from the stem, there is very little, if any, phosphoric acid ; in the ash from the seed, on the contrary, it constitutes more than half. This is one of the most beautiful provisions of an all-wise Providence. The straw of grain is not so especially intended for food as the grain itself, and hence the phosphoric acid passes up the whole length of the stalk, from the soil, and is finally deposited just where it is needed.

But it may be asked, Why is this phosphoric acid so necessary in the food ? The answer is obvious ; it is required there, in order that the animal may have materials for building up the

frame-work of its body, its bones ; as it will be remembered, that these consist, for the greater part, of phosphoric acid, in combination with lime.

Phosphoric acid being thus, in the grain crops, chiefly concentrated in the seed, it is plain, that any single crop does not carry away a very large quantity of it per acre. Suppose forty bushels of wheat upon an acre. These forty bushels would contain about fifty pounds of ash ; of this ash, from twenty-five to thirty pounds would be phosphoric acid. A single bushel of ground bones, then, would supply this quantity. We thus see how a very small quantity of these mineral manures may be amply sufficient for the wants of a large crop. The same reasoning applies to plaster, a bushel or two of which, as is well known, often produces such marked effect ; that small quantity is, in reality, far more than enough for the wants of the crop.

Now, this explanation may seem unintelligible to many of my hearers ; it may be true, they think, "but we don't understand it ; what do these words mean,—phosphates, phosphoric acid, carbonates, gelatine, organic matter, and so on ? We never saw such things, and we would rather let some one else meddle with them first ; there may be something in it, but we don't believe that it is best to trouble ourselves in the matter." This conclusion is the very one that I wish them to avoid. I wish them to trouble themselves about it, and to do so until they see whether what I have asserted be true or not.

I do believe, that on many of our New England soils, worn down by hard cropping, there is no one manure more valuable,—on some soils, none so valuable,—as bones. They are now seldom applied whole. In England, they have several gradations of fineness, as inch bones, half inch, and dust. When whole bones were employed, they were applied as high as seventy, eighty, and ninety bushels per acre ; at present, ten bushels of dust are found to produce a far greater effect. So extensive is the demand for them in Great Britain, that they are imported from all parts of the world. Many go from this country. Near Middletown, on the Connecticut River, there are now one or two mills, where bones are ground. The farmers

are beginning to apply them, at the rate of about ten bushels per acre, and with most remarkable effect. It is said, that, on their old, worn-out soils, they can get, in some cases, as good corn as when the land was first broken up.

Phosphoric acid is never abundant in ordinary soils, and is more speedily exhausted than other substances, because, on many farms, the principal part of the grain, containing, as we have seen, nearly all of the phosphoric acid, is sold off, and the straw retained for manure. In this way, although a large bulk of manure is annually applied, the phosphates in the soil may be annually decreasing, and a special addition of them may, after a time, become necessary.

When farmers are once awakened to the benefits of employing bones for manure, there is still another step, which may then be urged upon them. This is a new application of bones, and is one of the greatest discoveries of modern chemistry, in relation to agriculture. I refer to the dissolving of them in sulphuric acid. But if I were to enter upon this, it would be impossible to avoid using some more hard names. I should be obliged to talk about sulphuric acid, and phosphoric acid in connection with super-phosphate of lime, and fear that any who may now have become interested in bones, would drop them again in consternation, at the idea of encountering this new array of chemicals.

I may, however, venture to change my ground entirely, and give you one more instance of scientific explanation, with the hope that those who hear, may, in this case also, be inclined to try some of the things recommended, even if they cannot comprehend all of my reasoning.

You have, in this region, considerable tracts of light, sandy soil. This is not formed from the original rock of the country, but is composed of the debris of some other formation, in a distant part of the world; which formation, in the earlier history of our globe, must have been crumbled down by some unknown agency, and its fine fragments swept hither by vast currents of water, such as have left their traces, to this day, on every part of the earth's surface. This drift formation, as it is called by geologists, extends the whole distance to Long

Island Sound, and Long Island itself is in a great measure composed of it. It is more extensive in the lower part of Connecticut, than here. These light, sandy soils, as every farmer who has them knows, are too dry, liable to burn in summer, not able to retain manure when put upon them, inclined to blow about when ploughed up, miserable to hold any kind of valuable grass, and never forming a good rich turf. Soils derived from the decomposition of such rocks as form Mounts Tom and Holyoke, are of far superior character. But as these poor soils are here, our business is, to discover how we may best improve them. In New England, generally, this does not, thus far, seem to have been made an object. With some most noteworthy exceptions, the system pursued is an exhausting one; to take every thing off, and to put as little back as possible. No land will endure such treatment for a great length of time, and this least of all, for it is not, at the commencement, overstocked with fertility. Such poor, sandy soils require to be carefully kept up, and constantly gaining. They are then warm, pleasant, easy soils to work. How few fields do we see around us, in which this state of things is to be observed; how few there are, on the contrary, which are not continually running down,—where the crops are not poorer and more scanty than they ever were before. I am willing to leave this question to the practical men before me, whether the farms on light, sandy land, in their respective neighborhoods, are not, in very many cases, worth less than they were ten or fifteen years ago?

If this is true, as I am sure it is, a state of things is disclosed anything but creditable to New England farmers. This should be called destructive rather than improved farming. Such a deterioration is by no means necessary, for such land in various sections of this and other countries, is now brought to a good state of fertility, and is made to improve from year to year under a system of constant cultivation. You have instances of such judicious management within the limits of your own society.

The best method of improving these soils may well be pre-

faced by a remark or two, as to the points in which they differ from fertile soils.

If you take a very fertile soil, one that is capable of bearing crops for a long period without the aid of manure, and subject it to the processes of chemical analysis, you will always find appreciable quantities of some ten or twelve substances. It makes no difference from whence you bring such a soil, from what part of the world it comes, it will invariably contain these substances in greater or less quantity. Now if you take a soil requiring frequent additions of manure to make it bear well, as is the case on most of our farms, some of these substances are either absent, or in smaller quantity.

Going still farther and taking one of these light barren soils, we there find *many* necessary substances quite absent, and others so small in quantity as to be exhausted after a few crops have been taken away. Such, is in few words the difference between a fertile and a barren soil. Some are so barren, have so many things wanting, that they cannot, except in very favorable situations, be cultivated at all with profit; others have such deficiencies as can readily be supplied when their nature is known.

I have already alluded to the tendency in these light soils to dry up, and their incapacity to retain manure, as it constantly tends to evaporate into the air or to leach away through the porous sub-soil. A chief cause of these defects is the want of a certain substance called alumina, one of those which is always present in a very fertile soil. It is, when pure, a white, tasteless powder, and is that which gives the stiffness, tenacity and other peculiar qualities to clay. The want of alumina is not easily supplied, except in situations where clay can be procured. When it can be had, a load is frequently of more value than a load of manure, because it has not only an immediate effect, but also permanently improves the land. I know of one farmer near Hartford, who has carted clay by his return teams from that city, a distance of nearly nine miles. He assured me that it paid him well, and that a full load of stiff clay was worth upon his soil two loads of manure. In an address delivered the other day in Springfield to the Hampden County So-

ciety, it was stated, that the application of clay to the light sandy soils of Westfield in this State, had been remarkably successful. They put it on at the rate of about eighty cords to the acre, and considered that it paid them well. This addition of clay is not alone useful as bringing new and valuable ingredients to the soil; perhaps its principal value consists in the power which it gives the soil to retain moisture, and the manures which are applied to it. Thus it is the means of lasting improvement.

This quality of permanency in improvements, I hold to be a most important one in all cases. The farmer in this country is not a mere tenant, who holds his farm for a few years or for a single year: but he holds it for life, and in the expectation that his children will possess it after him. Is it the wiser policy to take a few rapidly diminishing crops, obtained with small expenditure now, and let the future take care of itself? Or to spend a little more at the commencement, and then to steadily pursue the course necessary for lasting improvement; constantly obtaining larger crops, and finally leaving the land doubled or tripled in value? This has been done, and may be done again; is it not the better course?

The great feature in the modern system of improving light soils, is the use of green crops for ploughing under.

That I may not be misapprehended by farmers in this district, it is necessary here to say, that when speaking of the green crop system, I mean both the crops that are ploughed in while green during summer, and those that are left until the ensuing spring and then ploughed in dry. It is in both cases an improvement by the use of green crops, there is only a difference as to the time of ploughing in.

Vegetable matter serves many of the purposes of clay in retaining moisture, and preventing the escape of fertilizing substances. Thus many soils which contain little clay, are yet very fertile because a large portion of them is vegetable in its origin; such are some of our rich garden moulds, or drained swamps.

Green cropping fortunately enables us to supply the deficiency of vegetable matter, much more easily and cheaply than

that of clay ; hence it has become a prominent feature in the management of every farmer who is desirous of really advancing the value of his land. The plants used as green crops are numerous, and before speaking of the theory or theories connected with their operation, I may properly devote a few words to the mention of those varieties which are most important in this and other countries. Here, at least in the northern states, almost the only green crop generally employed is clover. The properties and appearance of this plant are so well known as to require no description. Upon most soils it is easily grown, and in those where it does not thrive naturally, skilful manuring will generally bring it in. More would be gained by ploughing under the crops of two successive years than in any other way, but this plan would not work well on most soils, and there are few farmers who would be willing to let land lie idle so long as this, while it would bear any thing at all. Many prefer to go on cropping until they scarcely get their seed back, and then are obliged to let the land lie idle for a series of years in place of one or two, until it has regained strength to bear another scanty crop. Many too are unable to resist the temptation to cut and carry away the clover if its growth is heavy. Their intentions are good early in the season, but as haying time approaches, they begin to think of the two or three tons per acre of hay which might be obtained by cutting, and finally the advantage of present gains more than counterbalances the prospective improvement of the land. They afterwards plough in the rowen, it is true, but that cannot make up for the far heavier growth of which they have already robbed the soil. Some excuse themselves by saying that so large a crop cannot be got under, but it is not so, for this can be done by going over the surface with a heavy roller in advance of the plough, the clover then lies flat, and a plough with a sharp coulter has no difficulty in turning it over completely. Others recommend a heavy chain hung from the plough-beam so as to drag the clover down before the plough share reaches it. On the light soils of which I speak, these precautions will probably be needless for some time to come.

There are some soils where even a scanty yield of clover can only be obtained after much trouble and expense ; on these it is best to commence by the cultivation of some plant more particularly suited to such situations.

In Holland and some parts of Belgium, there are large tracts of sandy moorland, which is now being reclaimed ; on the sea-coast they have what are called "dunes." These are huge rounded sand hills, in some cases two or three hundred feet in height, blown up by the wind from the fine sand of the sea beach. They are constantly changing their shapes, and are, or rather were, steadily advancing inland. A single long continued gale sometimes drove the sand hundreds of feet upon cultivated fields. The appearance of one of these, freshly covered with sand, resembles some of those to be seen on each side of the New Haven and Springfield railway, in Wallingford and North Haven. Every expedient to arrest these moving sands, proved for a long period in vain. At last some one suggested the plan of introducing certain plants able to flourish in such situations. This was tried, and after perseverance for a few years, with great success. I have myself walked over these immense sand heaps, and have seen the surface, even on their exposed and bleak tops, bound together by the tenacious roots of the *Arundo Arenaria*, a species of reed, and other kindred plants. These roots run forty and fifty feet, sending up a shoot at every joint, and extracting nutriment even from these unpromising and inhospitable sands. When the plants have grown up and died for a few years in succession, a little soil begins to collect ; then, especially in the sheltered hollows, better grasses begin to appear, and finally a tolerable sheep pasture is formed. During the prevalence of the potato disease, the potatoes grown in these hollows are said to have escaped, they were few in number and small, but of fine quality.

When the land becomes capable, or is so at the beginning, of growing something more than the varieties of reeds just mentioned, another plant is tried with much success. It is called spurry, and has an excellent reputation, both for the bulk of green matter which it produces upon very miserable soils, and for the ease with which it may be cultivated. It grows

from one to two feet in height, and on many farms is cut for green fodder during summer and autumn. Successive crops of spurry, ploughed under, are said to produce remarkable effects, and to have brought up very poor soils to a state of fair fertility. Unless our summers are too dry, it would for aught that I can see, be well adapted to our climate, and some enterprising farmers might well afford to give it a trial, as there is now little difficulty in procuring seed.

Lucerne is largely grown in England and on the continent; its bulk is very great when flourishing, but it requires a tolerable soil, or at least subsoil, and is not so easy of cultivation as some other green crops. Rye is largely ploughed under in Holland and Germany, but I am sure that other green crops would yield a larger burden on the same soil and with less expense. Buckwheat is valuable in some situations, as it will often grow where clover does not succeed well.

Sainfoin is a favorite green crop in England, and there wild mustard is also sometimes sown. I have even known turnips to be sown broadcast and very thick, for this purpose. The thick sowing prevented much growth of bulbs, and caused the tops to shoot up quite tall; when they were a foot to eighteen inches high, the mass of vegetable matter to be turned in was very large.

But probably none of all these would produce in the same time, so much bulk as Indian corn. It would require a soil already partially improved. On such a soil, if sown thickly, either broadcast or in drills of five or six inches apart, the weight per acre when the plant had attained a height of three or four feet, would be enormous. It might be got under by first passing over with a heavy roller, laying it all flat, as in the case of heavy clover.

Thus much for the various plants employed; we must now speak as to the nature of the effect which they produce in altering and ameliorating the soil.

I have already mentioned that soils contain certain mineral substances, and that these are all necessary to fertility. They also contain, or should contain, a considerable proportion of vegetable, or as it is called by chemists, organic matter. This

part burns away when heat is applied, the remaining, or mineral portion of the soil, is called inorganic matter. The organic part, as it becomes air, and disappears by burning, must have been originally made from air.

In plants we find the same division as in soils, but with one very essential difference. In plants, the inorganic part or ash, is much the smallest, being often not more than one pound in a hundred, while in soils, it constitutes usually more than three-fourths and often nine-tenths, of the whole weight.

All plants have the power of drawing in from the surrounding atmosphere through their leaves, the kinds of air necessary to form their organic part. If any say that this is impossible, I would refer them to the air plants, which flourish and grow vigorously in empty pots at any height from the ground. These must draw every thing from the air, as they have no communication whatever with the soil. The inorganic part of plants must of course all come from the soil ; if there be any organic or vegetable matter there, a part of this may also be of service. In case there is little or none, as usual in light sandy soils, then the plant can draw all, or nearly all from the atmosphere. A plant then, that requires little ash, or an ash mostly silica, such as the reeds of the Dutch dunes, can grow and flourish where wheat or corn, requiring many substances besides silica, and those too in considerable quantity, would not succeed at all.

Now we can see what takes place in the gradual improvement of a soil by these means. Suppose a crop of reeds, or of spurry, to have grown up and ripened, what is the result ? A large quantity of the surrounding atmosphere has in the process of growth been converted into solid vegetable matter. As autumn comes on, the water which the stalks and leaves contain while green is gradually evaporated, they become dry, and fall upon the surface, there to decay. This coating thus formed, is a species of top dressing, it is a positive addition to the soil, of solid substance drawn from foreign sources. When generation after generation has been allowed to grow up and die, nothing being removed, a surface soil is gradually formed, which accumulates from year to year ; as may be seen on nearly

all wild uncultivated land. In situations where no counteracting influences are at work, a thin soil is thus at last collected, even on extremely poor land that is in a state of nature. I have seen land once good, so exhausted by cropping that even weeds would scarcely grow upon it. On soils naturally fertile, as at the west, this annual growth and decay produces in time a rich deposit of great depth, and of almost inexhaustible fertility.

It will be remembered, that these plants, whose remains form in this manner a new soil, contain, beside much organic matter, also some inorganic substances, or ash. This is, of course, drawn wholly from the soil. There are, in every soil, stores of inorganic substances, suitable for plants, that lie in what chemists call an insoluble state ; that is, they cannot be dissolved, either in water or acids. Gradual changes are, however, always going on, by which these compounds are becoming soluble, a small quantity being thus changed every year ; the rapidity of this change is doubtless accelerated, by the presence of the roots of growing plants. Stiff clays are especially benefitted, by ploughing in heavy green crops, as they are thereby lightened and mellowed, so that air and warmth can have access, and aid in the work of decomposition. The roots of growing plants penetrate into the subsoil, and bring up thence, mineral food. Some of the deep rooted green crops go very far down, and bring up stores, quite inaccessible to our ordinary cultivated crops. When the green crop dies, or is ploughed in, this inorganic matter is deposited within the reach of succeeding crops. Thus, the ground is at last prepared for valuable plants ; those which grow first, may not contain particular substances, necessary for particular plants ; but when crop has succeeded crop, each adding a little to the stock,—aided, meanwhile, by natural decomposition,—a sufficient quantity may have accumulated, for the support of the more valuable crop.

It is easy to see, how much faster the land must gain, by this system of green cropping, than by naked fallowing. In the naked fallow, by means of constant stirring and ploughing, the decomposition of insoluble inorganic substances is hastened, and a store collected for the next season. The same end is

more slowly accomplished, by letting land lie idle for three or four years. How much more advantageous and economical the effect of green crops, where the same decomposing action takes place in the soil, while additional mineral matter is brought from below, and the organic part at the same time increased. In naked fallows, on the contrary, this part, owing to constant stirring, and exposure to atmospheric action, rapidly decreases. Naked fallows ought, therefore, no longer to be employed by good farmers, save as they may be occasionally necessary, for the destruction of some troublesome weed.

It will now, I think, be easily seen, how it is that land is so wonderfully improved by judicious green cropping. The whole system is perfectly simple, and yet it may be considered one of the greatest improvements of modern times. It enables the farmer to cultivate, with profit, light, poor soils, that would otherwise scarcely be worth fencing. Where it has been pursued for any length of time, farmers are accustomed to say, that if they can only get a crop of clover in a field, they can afterwards, by proper management, do what they choose with it. By such a system, and by perseverance, all of the light lands, in this region, might gradually be brought into a state of permanent fertility. I have seen, in the north of England, a fertile tract, covering what was, a few years since, a wide moor, bleak and desolate.

In the centre of the flourishing farms, on a small hill, stands a tall stone pillar, some seventy feet in height, bearing on its base an inscription, signifying that it was erected in former days, to guide the traveller, bewildered on those dreary and trackless wastes. Many of the farms immediately surrounding that pillar, now produce thirty-two bushels of wheat to the acre. This change was brought about almost entirely by green cropping, and the use of bone and rape dust for manures.

There is yet one point to be noticed, as to the cultivation of green crops. The organic matter which they furnish, is drawn chiefly from the air, and is therefore, so far, a clear addition to the soil; the inorganic matter, on the contrary, although brought into a form and situation to serve growing crops, is, after all, a part of the earth itself; *nothing new* is there; we have only

discovered a new way of more completely impoverishing the soil. Exhaustion must come at last, and when it does, will be so complete, that all idea of profitable renovation must seem nearly hopeless. The farmer, then, who cultivates largely by the aid of green crops, should always add manures from foreign sources, for the special purpose of restoring the inorganic substances, so largely carried away by his crops. Such manures as ashes, bones, guano, lime, and plaster, would be those most advantageously applied.

Above all, when land has once been brought to a tolerable state of fertility, it is necessary to avoid carefully anything which may tend to exhaust it again. When it has begun to improve, it should be kept always advancing. This is quite as easy, and far cheaper, in the end. Let it always be remembered, that for every dollar saved by letting land run down, many must be spent to bring it up again. Unless the soil is treated generously, the farmer must not feel disappointed, if he does not receive generous returns. Manure produces less effect on poor, worn-out land, than it does on that which is fertile, and already well supplied; ten loads of manure, with less labor, will produce a far heavier crop on the one, than twenty will do on the other.

The time is fast approaching, in these Eastern States, when the farmer will be obliged to treat his land liberally, or accomplish little more than to drag out his life, esteeming himself well off, if he can make both ends of the year meet. The coming generation will not be so content as the past have been, to toil on in this unsatisfactory way. Indeed, the fruits of such a condition of things have been for some time showing themselves; our young men, in great numbers, go to the west, enter into business, choose a profession, take anything,—the most petty offices, and the most dependent situations,—rather than wear away their energies and muscles, in sowing and gathering such scanty crops as their fathers have done, and as are too frequent in every neighborhood.

But now, than this science of agriculture, what more attractive, more interesting profession, can be offered them? Here is novelty enough for the most ardent, beauty enough for the

most imaginative, with a prospect, at the same time, of a fair remuneration for their labor.

Massachusetts can, to say the least, as much as any other state, produce examples of those who unite learning, and that of various kinds, with practical skill, and practical success, too. Her farmers have daily before their eyes, evidences that knowledge, richly worth the having, may be found in books.

Some farmers of the old school, think it very strange, that men who quote books, and use hard words,—nitrogen, hydrogen, ammonia, alumina, and silica,—should, after all, obtain good crops ; but their astonishment will increase, as by and by they will find, that unless they follow these men in their improvements, they are falling behind them in every respect.

Those who think that they put down all modern improvers, and new-fangled devices, by quoting the old saying,

“ He that by the plough would thrive,
Himself must either hold or drive,”

have to learn, that this is to be taken with a qualification. He that is always holding, or driving, and never trying to do more, will doubtless earn the competence that patient industry seldom fails to attain ; but he who not only holds and drives, but *thinks*,—who keeps his eyes, ears, and mind busy, as well as his feet and hands,—other things being equal, will assuredly be the more prosperous and happy man.

FRUIT CULTURE.

[Extracts from an Address by GEORGE S. WILLIS, Esq., at the last Fair of the Berkshire Agricultural Society.]

There has probably been less pains taken for the introduction and propagation of good fruit within this county, than in any other part of the Commonwealth. In the breeds of animals for the stall, the dairy, and the draft ; in the reclamation of wastes ; in augmenting the productive powers of the reclaimed soils, and in other departments of rural industry, we have moved along abreast, at least, with our sister counties in

the State. But our orchards and fruit yards cannot vie with those of Middlesex or Norfolk. A nearer and readier market for surplus products, may have induced their superiority. The facilities for intercourse, and speed and cheapness of transportation are rendering such benefits universal, bringing the markets close by home, and giving fresh and quickening stimulus to exertion. Can there be found in all New England, an area of no greater extent than our own county, where there is so great a diversity of soil, climate and position, and where a greater variety of fruit trees from the nurseries can be transplanted and reared? The substantial constituent of all trees is the same or nearly so; their growth is promoted and their wastes repaired by substances common to all. Different species and varieties require respectively, in addition to the common aliments, their specific food, as well as their peculiar conditions of soil and climate; and the number of valuable fruits grown on this continent, in the same latitude with Berkshire, is few, which cannot here find, in some localities, a congenial home.

It may be true, that in most places within our borders, the peach cannot be propagated without disproportionate expenditure. It is cheaper and wiser, therefore, for most of us to obtain it by interchanges in markets. Still, there are positions very favorable to its growth, and where full remuneration is given to the grower by the superior qualities of its fruits; and when its insect enemies, and the destructive efforts of sudden and unseasonable changes of temperature shall have been overcome, the ground for its cultivation will be very much extended. And that this will be realized, is by no means improbable, as countervailing guards and agents to these sources of annoyance and ruin, are every day being discovered. He who shall find cheap and effectual remedies for these evils, will contribute largely to the comforts and enjoyments of life, and be entitled to the benedictions of his species.

That apples, pears, cherries, plums, and other kindred fruits, can be raised here in full abundance, in all their varieties, and of superior size and flavor, cannot be doubted. Experience, the unfailing test, has decided this question, if it were ever made.

The soil suited to the apple abounds with us. A soil rich,

moderately moist, and what is termed "a deep pan soil," is the preferable one ; and in such it will thrive, whether on the plains or in the vallies, on the declivities, or summits of hills, and in situations the most exposed. In soils thus constituted, whether found among the alluvions of the Hoosic or Housatonic, upon the slopes of the green mountain range, or on the intervening table lands, the apple tree will grow vigorously, blossom and mature its fruit. Rocky lands, into which the plough cannot be conveniently introduced, are, in many respects, peculiarly fitted and adapted to its growth. It is not in such situations exposed to excessive drought ; the falling moisture flows from the rocks into the soil, frequently and moderately irrigating it, and heat is radiated and reflected from the rocks upon it, thus providing two agents, the joint operations of which are essential to its thrift. To its successful culture on sandy plains, it has been recommended to plant it in excavations eight or ten feet across, and four or five feet deep, filled with small stones, rich loam from the low lands, and barn-yard sweepings, well mingled and compacted.

The remark is frequently made, and is full of truth, that the orchards on our hills and high elevations, where the soil is of the elementary character just described, are going to decay ; that the trees are covered over with the mosses, and their branches dying and falling off ; and these signs of deterioration are attributed to climate and situation. The cause is not to be found either in the original constitution of the soil, or in position or temperature, or in the joint agencies of all. It is from *exhaustion*, from want of proper cultivation, that the malady comes. It is a disease from starvation, which bad husbandry, or no husbandry at all has caused, and for which the husbandman is the only doctor ? and if, instead of debilitating by depletion and giving the disease the upper hand, as other doctors do, he aid nature's efforts for recovery by strengthening and nourishing food, as other doctors should, he will expel the distemper. Trees which bear lichens, and grounds producing mullen, pennyroyal and brakes, do so, because they cannot do better. Let wood ashes, rich vegetable mould retentive of moisture, and the suitable manures be applied, and not only

will health and vigor be restored, but many of the destructive insects will disappear, like a horde of savages before the well-appointed forces of the scientific tactician.

The comparative appearance of our own uncultivated orchards and fruit yards, and those carefully cultivated in the neighborhood of Boston, establishes the correctness of these remarks. Upon soils sterile by nature, less provided with the materials of vegetation, except as furnished by labor, and exposed to blighting east winds, the trees in that neighborhood show all the indications of thrift and health; well cultivated, well pruned, free of excrescences and parasites, with rinds smooth and glistening; they form a rebuking contrast with our own, neglected, gnarled and moss-grown as they are.

Behind in no other, we should be behind no longer, in this line of rural industry. New varieties should be introduced, better modes of training adopted, and progress made as fast as the operations of nature, hurried on by the rural arts and the appliances of science, will allow. Our stores of comfort and social happiness would thus be increased and our physical enjoyments multiplied. Thanks to the intelligence and zeal which have impelled some few, at least, of our farmers to embark in this enterprise. May heaven pour down the fertilizing showers, and distil the richest dews upon their nurseries, and imbue us all with *their* spirit.

When we reflect that the wild crab, is the apple tree from which the improved and multiplied varieties of this most valuable fruit have all sprung, by engrafting the selection of seedling trees, and a studious attention to soil and culture, we are not merely called upon to admire the patience and ingenuity which have wrought out results so happy and wonderful, but to follow on with increased zeal and diligence, in the same line, for further discoveries and requisitions. Fourteen hundred new varieties, the pure results of cultivation, are enumerated in the catalogue of this fruit, more than three hundred of which are of decided excellence for the table. Patient, ingenious, learned diligence, could, in a single generation, duplicate this number.

The improved varieties of the pear are little known among us, less known than the short-horn Durhams, though better

adapted, I am confident, to our soil and climate. If vegetables should become here, as they now are in France and England, the principal food of the people, the pear will be more deserving of the notice of the agriculturist than are the short-horns. Not indeed that pear which begins to rot before it is ripe, nor that which waits for the frosts to mature it—which is but a step in advance of its prickly ancestor, and whose bitter astringency tans the delicate linings of the mouth into red morocco—but such as Van Mons, with tireless industry and surprising skill, brought into existence in Germany. Such, too, as are found in the gardens of Kenrick and Perkins, and thence transplanted into the fields and gardens of Middlesex, Essex and Norfolk; sorts of every size and flavor, some in liquid sweetness like the clingstone, some of the delicate acidity of the strawberry; and some in juicy richness surpassing the sweet water. No other fruit mingles with its own specific flavor, in such rich variety, the agreeable taste and flavor of the rest.

That the pear will flourish in this county admits of no doubt. It does not ask for a soil of rich vegetable mould; moisture is less essential to its growth than to that of the apple tree. In the most common, deep, dry soils, it will succeed. It is found to grow and bear abundantly even on grounds poor and exhausted, and to flourish luxuriantly in clefts of rocks. Like most other things of extraordinary excellence, it is of slow growth; and a man of sixty, who is unwilling to plant for his own and his neighbor's children,—if such a man can be found in Protestant Christendom,—may omit to start and cultivate its seedlings; he can, however, by engrafting or innoculating upon the quince stock, bring it soon into bearing, without diminishing its productiveness or the qualities of its fruit. But he must not expect it to retain its natural longevity, or to be exempt from the diseases and insects to which the quince is exposed; besides, he must forego some of the choicest kinds, for all will not associate with the dwarfish quince.

It may be said that the general raising of fruit will glut the market and make it an unprofitable business. Let those afraid, halt, if they please, and the daring go ahead. For crab apples and prickly pears, choke cherries and wild plums, a large market

never was and never will be opened. But of choice fruit, carefully and neatly selected and preserved, when and where has the supply for any considerable period, exceeded the demand? Whatever is intrinsically excellent and properly preserved, is always suitably appreciated and liberally paid for—the inferior articles, those only will buy who must, or can do no better. The *superior* all will buy at a remunerating price, who can purchase. Who ever failed to sell a firkin of first rate butter, at a first rate price? And who ever sold a frowy firkin, known to be such, at any price at all, except to one who could purchase no other? It is the excellence of a thing, useful or agreeable because of its excellence, which introduces it into universal use, and ultimately gives it a place among those necessities of life, without which people no more think of living, than without cotton and woollen fabrics, flour and meal. Universal use secures it against redundancy, or the supply exceeds the demand no oftener than the demand exceeds the supply;—so that in closing the account, the excesses on the one side exactly balance those on the other.

Anxious as he who addresses you is for the advancement of fruit culture, and rejoicing as he does that it has roused the attention of many of his fellow citizens, he would on no account withdraw the attention of this society from grazing and tillage husbandry,—objects which have merited and received for so long a period its fostering cherishment and supervision. This is neither necessary nor desirable. By a judicious division of labor, every department of human industry, deriving its support and profits from the soil, can be successfully pursued. The relative position and value of the several departments, should be clearly ascertained and studiously preserved. They should all go abreast. In this way only is the line kept strong and unbroken. They should give aid to each other; this can be given only by moving on, shoulder to shoulder. The relative value and all the uses of the products of each should be discovered.

The farmer might well enquire whether the products of his fruit yard, are not as sweet and as refreshing to the tenants of his stall, as to the workmen who feed at his table. Whether

it be not true, that judiciously fed out, they do not swell the contents of his milk-pail; and whether they do not increase the weight and volume of the occupants of his piggery. Whether they cannot be substituted, in a measure at least, for the grains and other forage, so that the latter may be applied to new uses, or sent to the markets. And finally, whether the various rural occupations do not form one entire system, the parts of which have a mutual dependence, sustaining a relationship each to all the others, not detected and understood at a glance, into which it is prudent to enquire, and the obligations resulting from which, if clearly understood, it may be wise to observe.

AGRICULTURE TO BE ADVANCED BY SCIENCE AND AGRICULTURAL EDUCATION.

[*Extracts from an Address delivered before the Agricultural Societies of Norfolk and Bristol Counties, at their Anniversary Fairs, in Dedham and in Taunton, 1849, by HON. MARSHALL P. WILDER.*]

One of the first objects which claim our attention, is, THE APPLICATION OF SCIENCE TO AGRICULTURE.

The practical skill already evinced by some of our farmers, is worthy of all commendation; yet the art can never be raised to its proper standard of dignity, without the aid of scientific men; nor until the public mind shall be convinced that it is a study of far higher order than it has hitherto been esteemed, and at least equal in usefulness to any that has engaged the attention of mankind. Prejudice and extreme caution have prevailed against new theories and "*book-farming*," and it is not to be denied, that mistakes have been made by chemists and other writers; but one cause of this has been, a deduction of general principles, without an investigation of facts, sufficient in number and variety.

There are certain natural laws which one fact may develop and settle as well as a thousand; but there are others, quite numerous and important in Agriculture, which scientific analysis, or long and careful observation, alone can enable us to dis-

cover and usefully to apply. To the first belong the constitution of the atmosphere and of water, the two elements which are essential conditions of vegetable life, and which chemistry teaches us, are nearly the same in all latitudes and places on the globe; but to the second, belong the constitution of the different kinds of soil and manure, and of various vegetable productions, and the adaptation of the two former to the growth of the latter.

To unfold these processes of the vegetable kingdom, to show by what agents they are conducted, by what laws regulated, and how the whole may be turned to the greatest account to the farmer, with the least labor and expense, are problems, for the solution of which, Agriculture must depend on the natural sciences. The high province of this art, Cowper affirms, with as much philosophy as poetry, is

"To study culture, and with artful toil,
To meliorate and tame the stubborn soil;
To give dissimilar, yet fruitful lands,
The grain, the herb, the plant—that each demands."

By the application of chemistry to Agriculture, the crops in some parts of Europe have been more than doubled. Of this, therefore, as well as geology, botany and mechanics, he should not be altogether ignorant; and if he will add to his literary acquisitions some knowledge of meteorology, it will abate his veneration for weather-wise maxims, and embolden him to sow his grain in the old as well as the new of the moon, and to kill his beef and pork without regard to the tide.

We live and move in a world of wonders. Every blade of grass, every leaf, and every germ is an organized and living body. Every plant and vegetable is as capable as the human system of imbibing and digesting its appropriate food. For instance, by an analysis of wheat, we ascertain its ingredients and the food it requires for growth and productiveness. We know that it needs phosphate of lime, and that it is useless to attempt its cultivation, where the soil is wholly deficient in this element. Hence, we are as competent to feed a crop of wheat, as a flock of sheep, or a brood of chickens, but without

this knowledge, which science alone can furnish, we might apply a kind of manure which would be injurious and perhaps destructive. But suppose, however, such food be not administered, that the ground is prepared, and the grain sown ; it may flourish for a season, because it may find its proper nutriment in the soil, but let it be sown year after year, and it will prove less and less productive, and ultimately fail.

It has been the practice in countries producing wine, to bury the prunings of the vine at its root ; and chemical analysis has lately discovered that it contains a large proportion of potash, which is essential to its growth and productiveness. Again, it has long been known that a tree planted in a soil, in which one of the same species has previously grown, will flourish but poorly. Why is this? If a chemist analyzes both the tree and the soil, the former will be found to contain, and to require for its growth and fruitfulness, elements of which the latter is deficient. Hence, we learn with what kind of material that soil should be fertilized. We have seen instances also, in which barn yard manure had been so abundantly applied as to retard or prevent vegetation, and where sand, gravel, virgin loam or clay, was worth more to that soil than these manures ; and we have seen other instances, in which mineral manures, as lime, had been so profusely applied as to lose all efficacy. Why was it? Chemical analysis affords the reply and discovers to us that the soil was surcharged with these elements, and makes known the materials, and the proportion requisite to revive productive energy.

It is too late, in the progress of improvement, to denounce or anathematize these sciences. Though yet in their infancy, they have achieved wonders, and are destined to still greater results. There are departments of knowledge important to the agriculturist, which they have hardly entered—such, for the most part, as their application to the cure of the various diseases to which the vegetable kingdom is subject. We need here a *materia medica*, and science must provide it ; books which shall treat more fully of the diseases of plants, and which shall prescribe appropriate remedies ; yea, which shall guard and preserve our vines from the bugs, our plums from

the curculio, and our potatoes from infection. We have physicians for our horses and cattle, why not for our potatoes and wheat? Are not diseases in both the result of unnatural action, of agents which may be counteracted, of poisons which have their proper antidotes? Is there a disease for which nature provides no remedy?

If, by the application of science to Agriculture, we can fathom the depth of nature, and bring up to the light, for the admiration and the benefit of mankind, her previously hidden treasures, shall we hesitate to do it? Or, if others, fired with greater zeal, and endowed with more ample means venture into the labyrinths of science, explore the springs of nature, learn how her curious machinery acts, and then returning, unfold and explain her various processes, and teach how to practice art more successfully, shall we refuse to avail ourselves of the benefits of their labor?

What vast quantities of vegetable and mineral manures now lie buried in the earth, which might, by the application of these sciences, be appropriated to the fertilization of the soil!

The importance of MANURES to the success of the farmer, entitles them to a distinct notice.

By a natural law, every tree, plant and herb, from the cedar of Lebanon, to the flag on the Nile; from the loftiest oak of the forest, to the humblest daisy of the meadow; from the fantastic parasite luxuriating in solstitial air, to the little flower that peeps from Alpine snows; *every thing* endowed with vegetable life, requires its *own* peculiar aliment to sustain its vigor, and promote its growth. However varied this sustenance may be, and whether derived from earth, air, or water, if it be withheld, or mixed with uncongenial elements, deterioration and decay are inevitable.

Here, as with animal life, one principle runs through the whole, calling for the restoration of that strength and fertility which were reduced by vegetation and production. Inexhaustible fertility is a chimera of the imagination. Sooner or later the prairie and the richest alluvial soil, will require a return of the nutritive materials which have been abstracted by vegetation. However fertile our fields at first, the inevitable conse-

quence of the annual removal of the crops, is a reduction of the elements upon which growth and fruitfulness depend ; and without a restoration of these, sterility will ensue. We have seen fields so completely exhausted, that their renovation became a work of years. But for the annual inundations of the Nile, its banks would long ago have been as barren as the deserts of Arabia ; and in some old countries, instances are not rare, where territory, which once supported a large and thriving population, has become barren and desolate.

Our farmers cannot generally afford to purchase manures, nor is this necessary, except where the soil is deficient in some mineral, or other quality, essential to the production of certain kinds of crops. But with due attention to the accumulation and preservation of all that can be acquired from the fields, herds, and other sources, even where there are no beds of peat, and no mineral manures, sufficient may be acquired to keep the soil in a productive state. It is the farmer's business to *make* manures, and not to *purchase* them.

Of the different kinds, of their manufacture, adaptation, and application, it would be gratifying to speak, did space permit. Suffice it, however, to say, that there are two methods of practice on all these points : one is, by the slow process of personal experience ; the other is, by chemical analysis, which leads at once to the desired result.

Suppose that, in either way, the farmer adds twenty-five per cent. to the fertility, and consequently to the products of his farm, (an amount less than that which may be realized by many cultivators,) and suppose, also, that a corresponding result were secured throughout the country, how much have you advanced the agriculture of the land ?

Look, for instance, at the crop of hay in the United States, which last year was worth, at eight dollars per ton, *one hundred and twenty-seven millions of dollars* ; or of the product of Indian corn, which, for 1848, at fifty cents per bushel, would amount to nearly *three hundred millions of dollars*. This year, by this hypothesis, these would be increased, the former *thirty millions*, and the latter *seventy-five millions*, of dollars. But if we accumulate all the products of the ground, we do

not ascertain the full benefit of this increase of fertility and productiveness, because the expense of cultivation is not increased in the same proportion as the production ; labor is saved, and therefore, high cultivation is the best economy. Multiplying the productions of the country, is better than extending its boundary, and increasing its territory ; because the former adds to its wealth and power, without enlarging its frontier, and, of course, the expense of its defence.

We talk of our tariff and revenue, which have occupied our ablest statesmen, excited the public mind, and convulsed the nation ; and we have thought these subjects worthy of the treasure, the talent, and the time devoted to them ; but if the fertility of our soil were increased, and of course the productions, only two per cent., the addition would more than equal the whole revenue of the nation.

If any one inquire, Where is this fertility to be found ? our reply is, *THERE, where it is now thrown away.* A careful observation will convince any cultivator, that a larger quantity of manure is annually wasted in this Commonwealth, than is turned to any valuable account. Farmer Tuttle thinks a drain quite as essential to his barn yard, as to his cellar ; and Mr. Goodman, his neighbor, annually clears his yard, stables, and vaults, during the Indian summer, and lays their contents, in small heaps, upon his green sward and tillage, where, by evaporation and leaching, it loses most of its virtue ; and there it remains till spring, because his father did so before him, and left him the assurance, which accords well with his own experience, that it then spreads more easily, and mingles more readily with the soil. And how often do we meet, in our travels, instances where the manures of the stable and barn yard have lain for months, exposed to the sun, wind, and storm ; where the soluble ingredients have been either leached into a pond, there to waste their very quintessence on the desert air, or to trickle down the gutters of the roadside, to fertilize catnip, tansy, and wormwood.

These cases are not so frequent as formerly, and we cannot too highly commend the excellent and praiseworthy example of some of our farmers, in the erection of substantial structures,

not only suited to the convenience and comfort of stock, but particularly adapted to the preservation and increase of manures. The protection of *these*, by shelter, or some kind of covering, from the vicissitudes of the weather, is as important as the proper storage of our hay and grain.

The waste from this cause alone, is enormous. By an analysis recently made at the English Agricultural College, it appeared that manures exposed in the yard, in the ordinary way, lost more than half of their fertilizing properties, when compared with those which had been sheltered.

Another waste, which cannot be too highly reprobated, results from the *excessive heating* of manures, and the escape of their gases. The effluvia which arises from our stables and compost beds, when under fermentation, is the very life and stimulus of vegetation ; and the amazing loss thus occasioned, may be readily appreciated, by the odor which sometimes pervades a whole neighborhood. How often do we see these gases rising, like a column of smoke, burning up the most essential and active elements, and leaving only the cage, the bird having escaped. Here, one general direction must suffice, which is, mix with the manures, while in fermentation, proper absorbents, such as charcoal, clay, or gypsum, for the retention of these elements ; and when in a warm and active state, let them be mingled, or covered, as soon as possible, with the soil they are to fertilize.

No branch of agriculture is more important, than the manufacture, preservation, and application of manures ; neither is there any in which reform is more necessary.

Before we conclude, however, we must be allowed to speak of *that*, which is *vital* to the success of our whole enterprise,—
AGRICULTURAL EDUCATION.

The low condition of this, compared with the enterprise and zeal for improvement in other departments of action, demands for it a hearing and place, on all occasions like the present.

One of the greatest embarrassments of the farmer, is the want of a proper education for his calling. In other arts and professions, we employ only those who are properly trained for their business. The reason is evident,—we do not expect others to

succeed. But why do we not apply the same logic, and practical sense, to agriculture? We do not encourage an uneducated physician, or a mechanic who is not master of his trade; why, then, do we expect men to succeed in farming, who know no more of the nature of soils, nor of the adaptation of different species of manures to the various kinds of grain, grass, vegetables, and fruits, than they do of the rotation of day and night, or the seasons in one of the newly discovered planets?

I cheerfully admit, that there are honorable exceptions, in this county, and in other parts of our land; farmers, who have brought science to bear on their practice; who succeed, and even acquire wealth, while others, destitute of such knowledge, are oppressed with poverty, always in doubt and mystery, and blown about by every wind of doctrine.

Education makes the difference; the former have some knowledge of the adaptation of manures and crops to their soils, and of the best systems of rotation, and of cultivation. But the latter work at the other end of the lever, and vainly endeavor to supply the lack of mental culture, by physical power.

Why have so many of our sons forsaken the farm, for the office, the counting-room, the warehouse, and the professions? Why such a rush, by sea and land, from the homes of their childhood, for the glittering dust of California? Why have they not retained

“That fond attachment to the well known place,
Where first they started into life's long race,
Which keeps its hold with such unfailing sway,
We feel it e'en in age, and at our latest day?”

Alas! What has driven them from the homestead, overshadowed by the elms which their fathers planted, and under which, in their boyhood, they wrought out so many youthful wonders? Why eat they no longer the “Old Nonesuch,” or quench their thirst from the “old oaken bucket?” Why? For that lack of interest and skill in farming, which would have rendered it as lucrative and honorable as other pursuits, and which education alone can supply. Such examples, which have fallen un-

der our own observation, create a demand, which I only reiterate, when I say that our farmers must be educated.

“But our fathers were not educated, yet they were successful farmers.” True, but they possessed advantages which we cannot enjoy ; then, the soil was new, and of course more productive ; now, when its fertility has been diminished by successive crops, it must be restored and increased by artificial processes, to the success of which, knowledge is indispensable. Besides, the progress of the other arts enables men to realize better profits than they then received ; and corresponding improvements not having been made in agriculture, labor has here been less liberally rewarded.

“But we have seen your book-farmers, your deep ploughing, your highly recommended subsoil plough, turning up the stones, clay, and gravel ; we have seen your recipes for manufacturing manure, and have tried your nostrums for the destruction of insects, with fatal effect, for they destroyed not only the bugs, but also our vines.” What do such ridiculous incidents prove ? Simply, that there are men of *little* sense, and men of *no* sense, in this, as well as in every other vocation ; and they are painful illustrations of the necessity of a thorough education in agriculture ; they teach us that a little learning is a dangerous thing, and exhort us to drink deep at the Pierian spring.

Others insist, that *common sense* alone is needful. But common sense, such as they recommend, is a very uncommon thing ; yet, if it were possessed by all, why not rely upon it to make skilful mechanics, artists, and teachers, as well as farmers ? When common sense can manufacture a steam engine, construct a railroad, or teach mathematics, we may expect it, without the aid of science, to conduct successfully the operations of the farm.

Till then, let us not rely upon common sense for miracles, nor offer it as an apology for ignorance or idleness. Common sense is as valuable as it is rare ; but let us remember that it never yet made a plough, or planted an orchard, till it was properly instructed.

The standard of agricultural education, then, must be raised at least to a level, with that of other professions. Individual

health and happiness, the welfare of the Commonwealth and country, require it. Who can estimate its importance to the nation? I repeat it, agriculture, commerce, manufactures, and the arts, are all coördinates,—separate links in one vast chain.

Strange, indeed, that agriculture, which occupies, directly or indirectly, more than three-fifths of the population of the United States,—an art in which capital is so safe, and labor so productive; the parent of all other arts, and the source whence we derive our daily bread,—has received no more encouragement from science, from invention and discovery, from men of letters and of benevolence.

If funds are wanted for internal improvements, for public or private charity, for the endowment of institutions of learning or religion, the call is at once responded to, by the liberal citizens of Massachusetts, in a manner worthy of themselves, of their origin and destiny.

But present to them the claims of agriculture, they admit its utility, and profess an earnest desire for its welfare; yea, they expatiate most eloquently on its importance and moral influence, and assign it a place second to no other calling; yet when you invite them to contribute the “needful” for its improvement, they find excuses more plenty than gold dust on the banks of the Sacramento.

Why has it hitherto been so difficult,—nay, *impossible*,—to get a bill through our Legislature, granting ten thousand, or even five thousand dollars, in aid of an agricultural school, when much larger appropriations are annually made, for the support of objects, not half, no, not a tenth part so important to the Commonwealth? But we rejoice that the day is at hand, when such disregard of her true interest, and of the primary pursuit of man, will no longer exist in Massachusetts, of world-wide renown for the wisdom of her policy, in the encouragement of domestic industry.

Her sense of justice and of personal honor forbids it, and loudly demands the improvement for which we plead. What! shall the old Bay State, first in the march for liberty, first in legislation, first in internal improvements, first in whatsoever is lovely and of good report, be overmatched, and her glory

eclipsed, by any other state in the Union? New York is already in the field, and vigorously at work. Her governor, in his address for January, 1849, says: "I cannot too strongly recommend the endowment, by the state, of an agricultural school, and an institution for instruction in the mechanic arts." The assembly, then in session, responded to his excellency's call, and a board of able commissioners was appointed, to report a plan for the establishment of an agricultural college, and an experimental farm. A similar recommendation, also, distinguished the recent message of the governor of Maine.

In this struggle for improvement, Massachusetts will not be behind her sister states. She is already waking up and moving, and when she puts her hand to the plough, there will be no looking back. The attention of her sons is already turned to her neglected soil, and they are beginning to renovate their orchards and forests, to drain their meadows, to cultivate their farms, and to repair their barns and granaries, in expectation of years of plenty. We would aid and encourage them in this work, by legislation, by education, and by every means in our power.

Why should we not have an agricultural department in our national and state governments, as well as one for the military? Surely, the earth has been sufficiently fertilized by blood, to yield extra support for those whom the sword has spared! Why are not agricultural schools as intimately connected with the welfare of the Commonwealth, as normal schools? The latter we cheerfully sustain, for the education of a few hundred teachers. But who are to educate the thousands of young farmers, who, in their turn, are to teach agriculture to the next generation?

We have well-endowed colleges and academies, institutions for the promotion of the arts, and for the amelioration of the various ills that flesh is heir to; yea, the means of education in other branches, are so accessible, that no young man of talents, and thirst for knowledge, need remain in ignorance. But, unaccountable as it may seem, there is no institution in this Commonwealth, or in the country, where a young man can acquire the important art of becoming a truly intelligent and skilful farmer.

In France, and some other countries, agricultural institutions can be found, supported by government, and provided with extensive libraries, and with competent professors, who, in addition to the instruction which they give in their professional chairs, go into the surrounding country, call together the farmers, and instruct them in their various pursuits. The president of the French Republic, in a recent communication, commends such institutions to the particular care and patronage of the government, and announces, that a special commissioner has been appointed, on the subject of agriculture. There are, in that country, one hundred and twenty-two agricultural schools, and three hundred minor institutions, for the promotion of this art, sharing the patronage of the government.

We must have agricultural colleges and schools, or we must have departments in our institutions of learning, devoted to this art and science. Let our agricultural papers, and periodicals, continue their noble advocacy of this cause; let the pen of the learned write for these, and our journals; let the voice of the eloquent advocate this cause, in the halls of legislation, and throughout the length and breadth of our land; let efficient hands and warm hearts engage in it, and then the public mind cannot slumber; agricultural education will advance; our seminaries of learning, from the common school to the university, will provide a place for it in their processes of instruction, and we shall have among our yeomanry, such farmers as the world never before witnessed; men who will honor their vocation, and therefore be honored by society; the chiefs of our land, the glory of our nation.

SOME OF THE DEFECTS OF FARMERS, AND THE MEANS OF REMEDYING THEM.

[*Extracts from an Address by INCREASE S. SMITH, ESQ., at the last Fair of the
Plymouth County Agricultural Society.*]

Massachusetts, from her first settlement, down to about 1820, was mainly an agricultural State. Since then, other interests

have arisen, and the energies of the people have been turned, to a good degree, into other channels. "It may be doubted," says Chickering, in his statistical view of the population of Massachusetts, from 1765 to 1840, "whether there was any more of agriculture, properly so called, in Massachusetts, in 1840, than in 1820, or even much more than in 1790. There has been some increase of a few articles raised, such as potatoes, apples for eating, garden vegetables, and fruits. But generally, of the more substantial articles raised by farmers, twenty-five or thirty years ago, it is doubtful whether there has been any increase. The quantity of hay, of grains, of wood, of beef, and of pork, has probably decreased." No very essential changes have been made in the channels of industry, since 1840. Our agriculture remains nearly the same now, that it was then; that is, nearly the same *articles* are grown now, that were grown then.

Massachusetts does not pretend to compete with the great Egypt of the west, in the production of wheat, or with the great India of the south, in the production of cotton. She yields here, and willingly, too, to the law which nature imposes upon her. The manufacturing interest is now a prominent interest of the State. Manufacturing villages have sprung up, and are springing up, like the phantasmagoria of enchantment, in every nook and corner of our State. Our agriculture has lost, or is fast losing, the character which belongs to the agriculture of a virgin soil and a sparse population, and has assumed, or is fast assuming, that which belongs to an exhausted soil and a dense population. This fact leads to the statement of a defect in the science and art of agriculture among us, which, among others, it is the object of this association to supply. This defect is, the waste, the utter waste, of much that is provided by nature, for the replenishing and nourishing of an exhausted soil. In this respect, our farmers, as a body, are, compared with those of Europe, thriftless and slovenly; while, in the invention of labor-saving machines, and implements of husbandry, and in the application of them to the preparing of their land, and to the entering and harvesting of their crops, they are far superior to those of Europe. True, much has

been done, already, to call the attention of our farmers to this subject. The wash from the barns, and the slops from the sinks and chambers, of some of our country farm-houses, are saved, and converted into food for the growing crops. Still, this defect remains, to a greater or less extent, in almost every part of the State.

Another defect, which exists, to a very great extent, among our farmers, is a want of knowledge,—a deficiency of education, in some of the sciences which are most intimately connected with their pursuits. With chemistry, botany, and entomology, the farmer should be theoretically and practically acquainted. He is applying, successfully or unsuccessfully, the principles of chemistry, in every shovel full of manure which he spreads upon his fields. He is applying, successfully or unsuccessfully, the principles of botany and vegetable physiology, in every nip of the fingers in plucking the bud or shoot from his grape vine, the barren blossom from his squash vine, and in every operation he performs, of budding, grafting, and layering. And he is applying, successfully or unsuccessfully, the principles of entomology, in every shot which brings down the robin from his cherry tree, and in every attempt which he makes to destroy the myriads of insects by which he is surrounded, and by which the products of his labor are sometimes swept from the earth, as by a pestilence, or devouring fire. A certain practical knowledge of the principles of these sciences, comes down to a people from age to age, as the result of chance and necessity. A knowledge of these principles, which was sufficient when the soil was new, the population sparse, and the wants of society few, becomes insufficient, when the soil is exhausted, the population dense, and the wants of society multiplied a hundred fold.

In entomology, especially, the knowledge of one age is altogether insufficient for another. Other things being equal, an old, densely populated district, is more infested by insects, destructive to vegetation, than a new, sparsely populated district. With the increase of vegetable productions, comes the increase of insects. Hence, the necessity of a greater knowledge of their origin, modes, and habits of life, than before existed.

This necessity, to a great extent, exists at this present moment. Our farmers, as a body, with all their general intelligence, and practical wisdom, have but little knowledge of that department of animal life, which is so closely connected with their pursuits. The insects come, sweep over their fields like a devouring army, and disappear; but whence they come, and whither they go, and what are the means to be adopted to prevent their reappearance, are subjects too frequently hidden in total darkness. The want of scientific observation, and scientific knowledge, on this subject, is so great, that the people have no language to describe intelligibly what they *have* seen, and what they *do* know. They speak of worms, and bugs, and caterpillars, and butterflies, in language which, unless you know beforehand *what particular insect*, or *what particular state of the insect*, they are describing, conveys to you no definite knowledge whatever.

This want of knowledge, too, leads them sometimes to adopt measures to destroy the insects, and preserve their vegetables and fruits, which frustrate the very object they have in view. A singular instance of this occurred in my own neighborhood, a little more than a year ago. Three of my neighbors,—one a professed florist, another engaged pretty extensively in the nursery business, and the third a mechanic,—passed my house, one after the other, on two successive days. I happened to be out, and gave the “good morning” to each. In the few words of conversation which passed between us, each mentioned, incidentally, the feat he had recently been performing, to save his young trees from the insects. Each had found, among the plant lice by which his trees were infested, a great number of insects, as he expressed himself, which he had never before seen. These he had very courageously killed, thinking that he had thereby done *so much* towards saving his trees from the ravages of the insects. Now it happened, that these *insects killed*, were the very friends they should have welcomed with joy. They were the carnivorous larvæ, or caterpillars, of the coccinellæ, or lady-birds, whose mission was not to devour the leaves of the trees, or the plants, but the plant lice. They were one of nature’s checks and balances, which my neighbors, until then, did not know how to appropriate to their own advantage.

But in addition to the pecuniary advantage which the farmer may draw from his scientific knowledge, in such cases as the one mentioned, there is a higher advantage in the knowledge itself. "Knowledge is power," not only in the sense, that it gives its possessor a greater command of the material objects around him, enables him to appropriate them more skilfully to his own use, but also in the sense that he himself is a more elevated, godlike being; that he may hold, if he will, greater sway over himself, and battle more successfully with the tendencies to evil which he feels within him. The natural sciences should be taught in our common schools. Every child is naturally a naturalist. How much of the vulgarity, how much of the rowdiness, how much of the intemperance, revelry, vice of every description, which now disgraces society, would be removed, if men's heads were filled with knowledge instead of ignorance! If the overflowing energies of the young could be directed into the channels of knowledge, which nature opens for them and invites them to pursue, in all her works!

And this leads me to another remark of no small importance to the physical comfort, and intellectual and moral elevation of the farmer. Farmers, as things now are, are required, at some seasons of the year, to work too many hours a day for their physical comfort, or intellectual improvement. I do not know that it is possible, at these seasons, to abridge much the hours of work. But something may be done to render the laborer more comfortable under the burden which he bears. This is a greater regard to cleanliness of person. When the horse has been hard at work, and is brought to the stable white with perspiration, what does the merciful man—the good farmer—do to his beast? He cleans him. He rubs him down. He does not let the perspiration dry upon him, and clog the pores of the skin. He cleans him. And this, he says, is as good as a mess of oats.

Now let the farmer apply the same principle to himself, and the same results will follow. He comes in from his day's work, exhausted by fatigue, his clothes wet with perspiration, hardly able apparently, to sit up long enough to take his supper. He washes his face and hands, takes his supper and retires to rest,

sleeping in the same shirt in which he has performed his day's work. Now this is all wrong. The laborer should have his working dress, and clean dry dress to put on, when his work is done. He should bathe himself thoroughly, not merely his face and hands, but his whole person, from head to foot, and put on his clean dress before he takes his evening meal. The laborer who has never done this, knows not how much luxury he may enjoy, even under the severest labor. This bathing and change of dress almost removes the fatigue which he before felt, and allows him time for intellectual improvement, or pleasant social intercourse, which he must otherwise spend in sleep. This bathing, this cleansing, is no humbug with the man, any more than it is with the horse. The perspiration being removed, the pores of the skin are uncloyed, and the skin itself can perform its appropriate functions. Health, comfort, happiness are the result.

There are other reasons too why the hard working men should bathe themselves and change their dress, after their work for the day is done. Perspiration is one of the modes provided by nature for carrying off from the body much of the foul matter that accumulates in it. Perspiration in any considerable quantity, is offensive to the smell. Hence every consideration of delicacy and refinement, as well as that of health and comfort, calls upon the laborer to adopt the plan proposed.

Let it not be thought that the time thus spent each day, in bathing the body and changing the dress, is time lost to the hours of rest. It is exactly the reverse. It is rest itself. It removes from the body that which clogs the pores and obstructs its free, healthful, and pleasurable action. It removes, in a very great degree, the heaviest and most disagreeable burden, which labor lays upon us. The necessary soil of labor on the hands, arms, face, during the actual performance of labor, "does not defile the man." It has nothing degrading or low in it. But let it remain there, after the labor is performed, and it is out of place. Then "it defileth the man." Then it becomes a cause of physical, intellectual and moral degradation.

PRACTICAL HINTS ON FARMING.

[*Extracts from an Address by WILLIAM BUCKMINSTER, Esq., at the last Fair of the Barnstable County Agricultural Society.*]

Farmers in this country cannot too often reflect on the advantages they here enjoy, compared with the condition of the farmers of Great Britain. All the land there is owned by a few people, and the number of owners is annually diminishing. They have not half so many owners of land now, as they had at the time of our revolution. British legislators must look to this in time. When the number of owners is still farther reduced, it will be more difficult to sustain the smaller number by positive laws. In our own country, our statutes of distribution have an important effect; and if England does not adopt a similar system ere long, it will be too late to remedy the evil by peaceable means. Violence will be resorted to with the greater hope of success, when the number of interested landholders is farther reduced. In our own happy land the improvements that we make on our farms, are all our own. We sit under our own vines and trees, and have no landlords to molest or make us afraid. We hold our own ploughs and drive our own teams. Farmers who can live by their own labor, can thrive here, if any where.

In regard to the crops most suitable for this part of Massachusetts, Indian corn is entitled to precedence. This plant is in its native country here. It thrives best in a hot summer and on a warm soil. It is fond of sandy loams, and is not much in fear of perishing with thirst. It is the surest and safest crop that is grown in Massachusetts. We have had but two summers—1816 and 1836—in the last sixty years, which did not produce good crops of corn; and it is more secure from slugs and insects than any plant that is generally cultivated. And when we add, that more grain per acre is produced, than from any other that is known to the civilized world, we shall not fail to set a high value on Indian corn.

Potatoes have been the article most relied on by Massachusetts farmers for fattening their animals. But potatoes will

bear no comparison with corn. We must have them, at any price, for the table; but to make beef or pork, corn will be found the most economical food. Saying nothing of the uncertainty of the potato crop, or of the disease that now blasts it, it is not, in its best estate, to be compared with corn. Our soils are so much exhausted, that potatoes are not produced as easily as they were fifty years ago. Farmers now think one hundred bushels a pretty fair yield. Yet they have abundant reasons to think that they can as easily grow fifty bushels of corn on the same ground. Now we seldom find a farmer who does not value one bushel of corn as high as four bushels of potatoes, for fattening.

But on comparing corn with potatoes, there are still other advantages in favor of corn. The good fodder from an acre, is from one to two tons. The seed costs not one twentieth part so much, as for an acre of potatoes; the labor of planting and harvesting is less; and the soil is left sweeter and in better condition for after harvests. We can therefore give up the potato to those who must have it for the table, hoping that it will not cost so much trouble to grow it, as it has done for some years past.

Wheat cannot be grown advantageously in this part of the State. There is not clay enough in the soil here for wheat. Rye is a better grain for a sandy soil. When we can procure flour at six dollars per barrel, we lose nothing by purchasing our supplies.

I am told that some attempts have been made here to dyke the salt meadows and extend the upland. This has succeeded well in some places. In Middlesex county we have done much to reclaim our bog meadows. We find that on many farms one load of manure will produce twice as much hay on these bogs, as on high land. These bogs are first well drained; and top-dressings must be applied occasionally to keep out the wild grasses. These bogs are subdued in different modes, according to circumstances. Sometimes we bury up all the natural grasses with gravelly loam, carted on in the autumn or in winter. Such mixtures are always beneficial.

There seems to be no obstacle in the way of growing apples

on the Cape. Fruit trees should stand in orchards, where cattle are not admitted. The soil should be kept broken. The roots of trees in our worn soils, cannot contend successfully against grass roots. But when the orchard is kept in tillage, the trees are soon large enough to bear. I once set ten Baldwin apple trees in a loamy soil, not rich, and nine of these trees bore nine pecks of apples the fourth year after setting them. These trees were three years from the bud, when transplanted. No especial care was taken of them, other than to place old stack hay around the trunks and place flat stones on it to keep it in place. This old hay kept the ground moist through the summer; kept it light too; and killed the weeds, or kept them from starting. This mulching made it unnecessary to set the trees deep in the soil, and no stakes were needed to support them.

Farmers complain of the want of manure. There are but few farmers who can afford to purchase it. With good management, a farm will become richer as it is cultivated more. Much is wasted on a majority of our farms,—but we are improving. Twice as much manure is now saved, from an equal number of cattle, as formerly. We mix other matter with the excrements to secure the salts; and we suffer none of our cattle to stroll about in winter. Our hogs are kept up through the year.

It is now more important to plough deep, than when the soil was new. The cheapest mode I have ever tried to turn the earth the other side up, is to employ a well trained yoke of oxen that need no driver. They will travel better without a hand beside them, than with one. Oxen should all be so trained, that the ploughman can manage them while he guides the plough.

Farmers ought to form clubs in each country town. When they are in the practice of meeting and discussing questions relating to farming, they mutually improve. Young men intending to follow this occupation should join, and learn wisdom from the experienced. In such meetings, many good ideas will be circulated. All will improve, and a good spirit will be fostered. Emulation will be kept alive, and a proper degree of pride in this honorable occupation will be nourished.

